

Fire Research Report

Assessing and Selecting High Performing Fire Service Recruits of the Future

Cerno Limited

2003

The firefighter selection process currently used by the New Zealand Fire Service (NZFS) was reviewed to determine potential improvements to the competencies and selection tests on which firefighter applicants are assessed. Three key sources of information were used to determine the suitability of the current selection process: 1) an in-depth review of psychological assessment literature and Fire Service literature; 2) a workshop with NZFS subject matter experts; and 3) a survey of senior NZFS staff.

The results of the review determined that the NZFS currently assesses firefighter applicants on many skills and abilities critical to successful firefighter performance, and that the current selection tests elicit valuable information from firefighter applicants.

However, the review highlighted opportunities for the NZFS to improve the way in which they currently assess firefighter applicants. Specific recommendations include providing NZFS assessors with in-depth training and clear and comprehensive instructions on how to assess, rate, and short-list applicants on the selection tests, to ensure assessment accuracy and consistency.



New Zealand Fire Service Contestable Research Fund

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1. Executive Summary

The New Zealand Fire Service (NZFS) identified the need to review the process for assessing and selecting recruits, to ensure it selects the best applicants for the firefighter role. In April 2003, the NZFS contracted Cerno Limited to review their selection process for firefighters. This paper presents the results of that review.

Recommendations

Cerno has recommended a number of changes to the structure of the firefighter selection competencies, and the application of the selection process. These recommendations are summarised below.

Firefighter selection competencies

1. Assess firefighter applicants on competencies that have been identified as critical to successful firefighter performance. These are:
 - Drive, Energy, and Achievement Focus
 - People and Team Work Skills
 - Applied Problem Solving Skills
 - Communication Skills
 - Physical Fitness
2. Ensure each competency criterion assesses a different skill, ability, or attitude, so that there is little overlap between criteria.
3. Ensure each competency criterion clearly describes a specific skill, ability, or attitude to reduce the need for interpretation.
4. Where possible, ensure each competency criterion is assessed by more than one selection test, to provide a range of observations of that skill.
5. Do not differentially weight each firefighter selection competency when making assessment ratings, given that there is no evidence for the differential impact of the different competencies on firefighter performance.

Firefighter selection process

NZFS Pre-entry characteristics

1. Continue to accept applicants with any educational qualifications, to increase the pool of suitable applicants for the firefighter role;

2. Do not prefer applicants who hold a Heavy Transport Licence or First Aid Certificate, to avoid discriminating against people who have not had the opportunity to gain them;
3. Prefer applicants who have knowledge of languages in addition to English, to be responsive to the changing demographics of New Zealand's population; and
4. Continue to accept applicants of any age, to be in accordance with New Zealand Employment Law.

Application Pack

1. Include questions that request information critical to the firefighter role (i.e. pertaining to the newly developed competencies), to ensure the NZFS is requesting the most useful information from applicants.
2. Include a separate booklet with detailed instructions to assist applicants to complete the Application Pack.
3. Phrase self-assessment questions to ensure applicants will clearly understand the type of response sought (e.g. 'Can you describe a situation in which you had to deal with people that were different to yourself?').
4. Advise applicants to provide full-sentenced, short-answer responses to the self-assessment questions, to ensure that response brevity does not disadvantage applications, and to provide an opportunity for assessors to evaluate written communication skills.
5. Provide an Application Pack Rating Guide for assessors, incorporating clear and comprehensive instructions on how to assess, rate, and short-list applicants. This will improve the accuracy and consistency of assessment ratings.

Psychological Testing

1. Replace the current administrative ability tests with the ACER PL & PQ, and the Standard Progressive Matrices tests to directly assess the general intellectual ability of firefighter applicants.
2. Develop norms for the general intellectual ability tests over time by recording firefighter applicants' (both successful and unsuccessful) test scores at each recruitment round. Note: prior to the normative database being developed (i.e. for the first recruitment round), the NZFS could use New Zealand Fifth-Form norms for the ACER PL & PQ, and UK working population norms for the Standard Progressive Matrices test.
3. Assign Human Resources staff responsibility for administering, scoring, and interpreting the cognitive ability tests, and regularly updating the normative database and reviewing the test cut-off scores.

This will ensure; 1) suitably qualified people administer and score the tests (the recommended tests require basic training in test administration and interpretation); 2) the confidentiality of the process and results are maintained; 3) the testing process remains consistent throughout the country; and 4) there is minimal risk of the tests being widely distributed in the regions.

4. Delay using personality testing in the selection of firefighters until dedicated and qualified staff can be assigned the task of administering, scoring, and interpreting personality tests. This will ensure that personality testing is conducted legitimately and adds information that will be of value to the assessment process.

Practical Assessment Course

1. Abbreviate the PAC to include only the workstations that comprehensively assess the targeted competency areas (i.e. Lecture, Heights Test, Practical Dexterity, Lagoon Crossing, Confined Spaces, Computer Skills, Conflict Resolution, Written Report, and Obstacle Course).
2. Provide assessors with clear and comprehensive criteria on which to rate applicants, so they know exactly which skills, behaviours, and attitudes are indicative of a high assessment rating.
3. Assess applicants' performance against only those competencies identified as critical to firefighter performance, to enhance the objectivity of short-listing decisions.
4. Use Peer Review Form data to inform the 'People and Team Work Skills' competency rating.
5. Assess skills that are easily demonstrated, observed, and rated, to enhance the ease and accuracy of assessor ratings.
6. Rate applicant performance on a five-point, rather than seven-point, rating scale to enhance the ease of rating.
7. Give assessors clear and comprehensive instructions on how to run PAC workstations, so that the workstations are consistently conducted around the country over time.
8. Give assessors in-depth training in the assessment, rating, and short-listing of applicants to ensure consistency and accuracy.
9. Audit assessor ratings regularly to ensure accuracy and consistency.
10. Use PAC performance ratings to select applicants for the interview, as well as inform possible interview questions, to ensure that the information collected from this exercise is used to best effect.

Interview

1. Provide interviewers with clear instruction on how to conduct the interview and assess applicants' responses, to ensure assessment consistency and accuracy.
2. Assign at least three interviewers to the interview panel, in order to increase the thoroughness of the assessment. Of this three, one would be a specialist interviewer, to ensure consistent application of interview protocols and to lead the assessment of applicant responses.
3. Conduct regular assessment audits to ensure interviewers are making accurate and consistent assessment ratings. Human Resources staff, or similar experts, could conduct these audits.
4. Include a notes page on the interview form, where interviewers can note issues arising from applicants' Application Packs and PAC performance, to enable further investigation in the interview.

Reference Check

1. Include a section for notes on the reference check form, where interviewers can note issues arising from applicants' PAC performance and interview, to enable further investigation in the reference check.
2. Assign trained interviewers the responsibility for conducting reference checks so that reference check consistency is maintained and referee information obtained is comprehensive and clear.

2. Background

2.1 Review rationale

The NZFS sought a review of the process for assessing and selecting recruits because of:

- Future turnover amongst older Fire Service personnel at a rate greater than expected; and
- An increase in the average age of recruits, resulting in an older and somewhat homogenous recruit population.

The Fire Service also has a need to select people who:

- Are representative of the NZFS's target groups (e.g. women, Maori, and Pacific peoples);
- Are psychologically robust and can cope effectively with the demands of the firefighter role;
- Can effectively meet the future requirements of the role; and
- Are open to working in locations that the Fire Service has found hard to fill (e.g. Gisborne, Kawerau, etc).

The implementation of a new Training and Progression System (TAPS) has also signalled the need for a review of the selection of recruits, so that those applicants selected are able to cope with the changing demands of training. The current review was designed to provide the Fire Service with practical and accurate means of assessing and selecting recruits to meet the current and future requirements of the Fire Service.

2.2 Aims and objectives

The NZFS was seeking a robust assessment and selection process for selecting effective firefighters, which would identify recruits who can:

- Adapt to current and evolving operational requirements in a range of community settings, and
- Act as a resource pool for future Fire Service specialists and managers.

The specific project objectives are:

1. To identify recruit competencies that:
 - Predict successful firefighter performance;
 - Are aligned with research evidence and best practice;
 - Take into account the Fire Service's present and future role;

- Identify predictors of potential beyond the recruit level position; and
 - Reflect the Fire Service's Training and Progression System (TAPS) requirements.
2. To develop a recruit selection process for the New Zealand Fire Service that:
 - Provides an accurate and comprehensive assessment of recruit competencies;
 - Identifies personnel who will relate to at-risk communities and other target groups;
 - Reflects the Fire Service's EEO management objectives; and
 - Provides operational managers with high levels of satisfaction with the capability and commitment of new recruits.
 3. To develop a methodology that enables the Fire Service to evaluate the ongoing effectiveness of the revised recruit selection process (i.e. the accuracy, practicality, efficiency of the selection process, ability to attract personnel that the Fire Service can retain, etc).

2.3 The Research Project Steering Group

A steering group was established to oversee the research project. The steering group was comprised of seven NZFS staff from various branches of the Fire Service (e.g. operational, recruitment, training, Human Resources, etc), and a New Zealand Paid Firefighters' Union staff member. The role of the steering group was to provide feedback from a variety of NZFS stakeholders on project ideas and progress, and to act as subject matter experts on technical issues (e.g. intricacies of the selection process, demands of the firefighter role, training requirements, etc). The steering group was convened on the completion of significant project milestones.

2.4 Methodology

The methodology adopted for the review is summarised below.

Step 1: Scope and plan the research project

During this step, a project plan was developed along with a number of performance measures, which informed the design and evaluation of the competency approach.

Step 2: Identify recruit competencies and potential selection approaches

A range of information sources were used to assess the NZFS's current firefighter competencies and selection process:

- **Literature review.** Both psychological assessment literature and Fire Service literature were reviewed to identify best practice assessment tools and techniques. This included a review of how international Fire Services (mostly in Australia, England, America and Europe) select firefighters.
- **Workshop with NZFS subject matter experts.** A workshop was held with 16 NZFS subject matter experts to identify the skills, attitudes, and abilities that differentiate excellent firefighters from average firefighters. This workshop also focused on determining the skills that are crucial to the firefighter role at present and in the future, and those skills that are determinants of leadership ability within the NZFS.
- **Survey of senior NZFS staff.** Current managers of firefighters selected for employment between 2000 and 2003 were asked to rate the performance of these firefighters, to determine the skills, attitudes, and abilities critical to firefighter success. These managers were also asked to suggest improvements to the current selection process.

Step 3: Identify and validate firefighter assessment tools

The information gained from Step 2 was used to develop a list of firefighter selection competencies. A draft selection process was then created to assess these particular competencies.

The following sections describe the results of the review, and recommended changes to the NZFS's current firefighter selection competencies and process.

3. Evaluation of the current firefighter selection competencies

This section describes and evaluates the firefighter selection competencies currently used by the NZFS. As outlined in the previous section, a number of sources of information contributed to this evaluation (e.g. a literature review, a workshop with Fire Service staff, and a survey of NZFS senior staff), to determine potential improvements to the NZFS’s current firefighter selection competencies.

3.1 Current NZFS firefighter selection competencies

Applicants applying to join the NZFS are currently assessed on five competencies. The competency titles and definitions are outlined in Table 1, along with the relative weighting they are given in the selection decision (e.g. ‘Being a Team Player’ is given three times more weight than ‘Physically Competent’). A detailed description of the criteria and the selection tests that measure these criteria are included in Appendix A.

Table 1

Competency Descriptions and Weightings Currently Being Used by the NZFS

Competency	Weighting
Being a Team Player Interacts effectively with other people. Willingly works with others to achieve goals (includes persuading and influencing, relationship building, communication and interpersonal understanding).	X 3
Attitude and Personality Is proactive and thrives on achievement. Recognises and seizes opportunities to improve personal performance and to achieve goals. Reacts positively in a stressful situation. Realistic about the scope of their role as a new recruit within the NZ Fire Service.	X 3
Learning and Retention Willing and open-minded about learning new things. That which is learnt, is retained and used effectively.	X 2
Interpersonal Skills Interacts effectively with a wide range of people (includes persuading and influencing, relationship building, communication and interpersonal understanding).	X 2

Competency, continued	Weighting
<p>Physically Competent</p> <p>Has an active physical lifestyle, good dexterity and hand-coordination (this includes physical work, sporting activities and regular gym attendance).</p>	<p>X 1</p>

3.2 Development of a revised firefighter selection competency model

Three sources of information were used when evaluating the content and structure of the current firefighter selection competencies: a literature review, workshop with NZFS subject matter experts, and a survey of senior NZFS staff.

Literature review

The literature review compared the NZFS firefighter selection competencies with those used to select firefighters for Fire Services in other countries. Unfortunately, information on competencies (and processes) used in selection was difficult to obtain. While several Fire Services in Australia and the United Kingdom include a list of the firefighter selection competencies in their recruiting information, there is little information available on American Fire Services' firefighter selection competencies. Most American recruiting information tends to include only the minimum entry requirements for the firefighter role (e.g. HT licence, First Aid certificate, relevant education and experience, etc), rather than the specific criteria that potential firefighters will be assessed against. There is also little information available on the comparative weightings of competencies in making selection decisions. Despite the difficulties obtaining information, a competency comparison of the NZFS and nine other Fire Services was possible (Appendix B). This comparison suggests the NZFS selection competencies (i.e. Being a Team Player, Learning and Retention, Physically Competent, Interpersonal Skills, and Attitude and Personality) are representative of what firefighters are being assessed for in other countries. One competency area in which the NZFS differed from other Fire Services was 'Communication Skills'. Several other Fire Services specifically assess applicants' Communication Skills as a separate competency, while the NZFS does not.

The information gained from the literature review was used at a workshop to inform Fire Service subject matter experts about the skills that other Fire Services assess firefighter applicants on. The purpose of this was to assist staff to identify additional skills that the NZFS could be assessing in potential firefighters.

Workshop with NZFS subject matter experts

Sixteen NZFS subject matter experts attended a workshop to identify the skills, abilities, and attitudes that differentiate excellent firefighters from average firefighters. This workshop focused on determining the skills that are crucial to firefighters' current and future roles, and those skills that are determinants of leadership ability within the NZFS.

The NZFS staff listed a range of skills they believed differentiated excellent from average firefighters. These were content analysed, and 54 different skills, abilities, and attitudes critical to successful firefighter performance were identified. The skills were grouped together according to similarity, for comparison with the firefighter selection competencies used by the NZFS and in other countries. The skills represented four main themes, which are described below:

- Being motivated to be a firefighter, being calm in pressured situations, displaying a respect for authority, etc.
- Interacting well with a variety of people, being able to listen and put oneself in other people's shoes, showing cross-cultural sensitivity, etc.
- Thinking quickly on one's feet, having good problem-solving skills, displaying manual dexterity and spatial ability, etc.
- Having the necessary level of fitness to perform the firefighter role and being motivated to maintain that fitness.

The skills identified in the workshop were included in a survey (please refer to Appendix C) that was sent to senior NZFS staff to determine the skills most related to successful firefighter performance.

Survey of senior NZFS staff

The survey asked respondents to rate (using a five-point rating scale) the performance of current firefighters who were employed between 2000 and 2003 on a range of skills, abilities, and attitudes identified as critical to successful firefighter performance. Respondents were also required to make an overall rating of performance, using the same rating scale. At the end of the survey, there were a number of open-ended questions asking respondents what they thought were the most important skills to assess when selecting firefighters, and what skills should be assessed, that are not already assessed. The surveys were sent to managers of the 268 firefighters employed using the current selection process.

174 surveys were returned, representing a response rate of 65%. The response rate was pleasing considering this was the first time that firefighters' performance had been formally assessed within the NZFS. The results of the analysis of survey responses are described below.

Factor analysis of survey ratings

A factor analysis was conducted on the survey data, to determine the skills, attitudes, and abilities considered integral to successful on-the-job firefighter performance. The analysis identified five key competencies, indicating that survey respondents commonly use five dimensions to assess on-the-job firefighter performance. This tentative competency model included the following competencies:

- **Drive, Energy, and Achievement Focus** (similar to the current competency 'Attitude and Personality'). This competency concerns a person's keenness to learn new skills, their level of drive and energy, and their achievement focus.
- **People and Team Work Skills** (similar to the current competency 'Being a Team Player'). This competency assesses applicants' ability to relate to a wide range of people, their teamwork skills, and their openness to others' views.
- **Applied Problem Solving Skills** (similar to the current competency 'Learning and Retention'). This competency includes applicants' ability to apply skills and knowledge, and solve problems and make decisions in pressured situations.
- **Communication Skills** (similar to the current competency 'Interpersonal Skills'). This competency concerns applicants' ability to communicate effectively verbally, in writing, and using a computer.
- **Physical Fitness** (similar to the current competency 'Physically Competent'). This competency assesses applicants' current fitness level and motivation to maintain their fitness.

This tentative model was evaluated in two ways to determine its robustness. Firstly, the importance of each of the five factors in explaining successful firefighter performance was estimated. Secondly, a content analysis was performed to confirm whether the tentative model included factors that; 1) are the most important to assess when selecting firefighters; and 2) should be assessed, but are not currently assessed by the NZFS.

Multiple regression analysis of survey ratings

To further investigate the tentative competency model, multiple regression analysis was used to determine how important each competency is when predicting overall firefighter performance. This analysis indicates how much effect a competency has on overall ratings of performance when all of the other competencies have been held constant. Figure 1 presents the results of the analysis. The length of the bar is proportional to the strength of the relationship between the competency and overall

performance (i.e. a bar that is twice as long as another bar is twice as important in predicting performance).

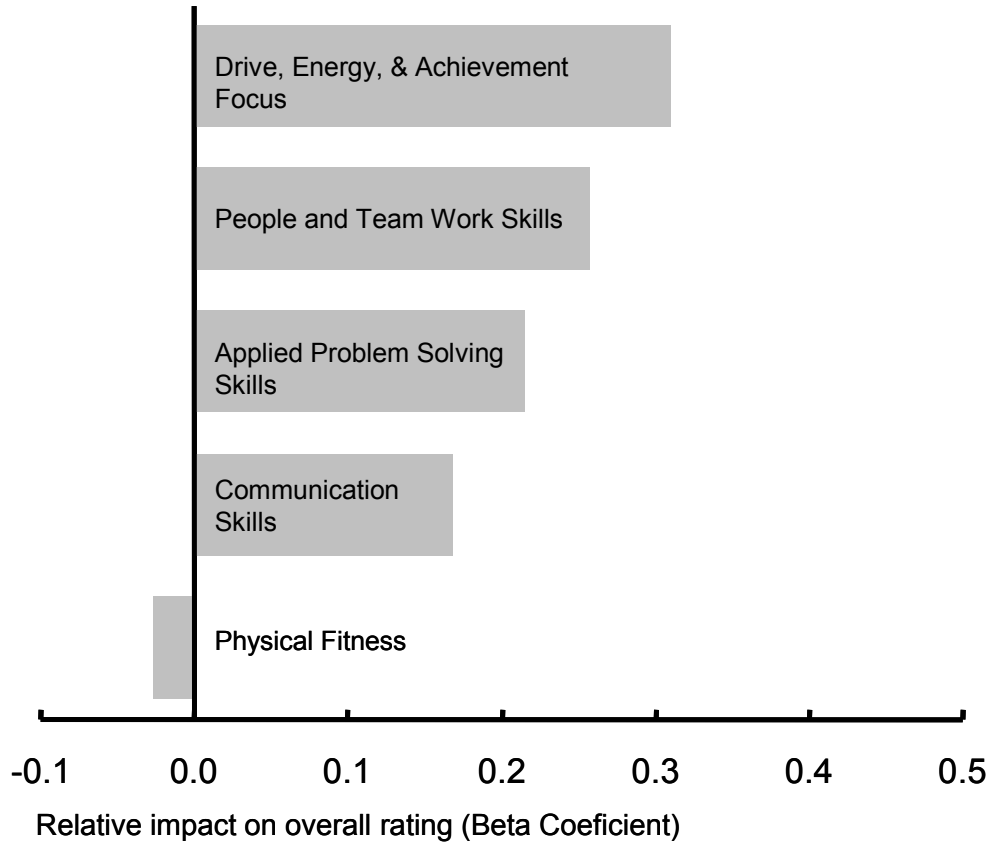


Figure 1. Relative importance of the five competencies to being a successful firefighter.

The results suggest that when making decisions of overall firefighter performance, survey respondents placed the most importance on Drive, Energy, & Achievement Focus and the least importance on Physical Fitness, which has a slightly negative relationship with overall performance (i.e. is considered relatively unimportant when rating overall firefighter performance). Physical fitness is likely to be considered unimportant because it is assumed that successful firefighters already possess the required level of fitness to perform the job.

Overall, the five competencies explained approximately 67% of the variance in overall performance. The remaining 33% of the variance in overall performance can likely be explained by other attitudinal factors such as commitment to the job, integrity, etc.

Content analysis of responses to the open-ended questions

The responses to the survey's open-ended questions were combined for each question, and content analysed to identify common themes (please refer to Appendix D for a full description). The responses have been compared to current NZFS firefighter selection criteria, to identify any additional skills that the NZFS could be assessing.

As illustrated in Table 2, when survey respondents were asked to list the most important skills to assess when selecting firefighters, they indicated overwhelmingly that being a team player was important. Survey respondents also acknowledged the importance of practical skills, and the ability to take instruction and remain calm under pressure. Interestingly, physical fitness emerged as an important skill to assess, despite it being regarded as a relatively unimportant predictor of firefighter success. All of these skills provide support for the tentative competency model.

Table 2

The Most Important Skills to Assess When Selecting Firefighters

The five most frequently mentioned skills	Number of Responses
Able to be a team player/work in a group	51
Practical/hands on skills	26
Respect for superiors/authority (ability to take instruction)	21
Physical Fitness	21
Calm under pressure	20

When asked what skills should be assessed (but are not currently assessed) when selecting firefighters, survey respondents thought it was necessary to assess applicants' work history and experience (please refer to Table 3). In addition, a number of attitudinal factors emerged as factors that should be assessed in potential firefighters (e.g. ability to remain calm under pressure, take instruction, etc). The two most frequently mentioned skills (i.e. calm under pressure, respect for superiors) provide support for the tentative competency model. The remaining additional skills suggested (i.e. general life skills/experience, having an HT licence, previous experience as a firefighter/tradesperson) were not listed as specific survey items. This was because they could not be defended as key firefighter requirements given that they would discriminate against younger applicants and those with financial constraints.

Table 3

The Skills That Should be Assessed When Selecting Firefighters

The five most frequently mentioned skills	Number of Responses
Calm under pressure	8
Respect for superiors/authority (ability to take instruction)	7
Previous experience as a firefighter/tradesperson	7
HT Licence/Ability to drive	6
General life skills/experience	6

Overall, the results of the content analysis are supportive of the tentative competency model identified by the factor analysis of the survey results. Although the 'Physical Fitness' competency was shown to be relatively unimportant to overall firefighter success (compared to the other four competencies) in the multiple regression analysis, the analysis of survey respondents' comments suggested that this is an important competency that should be assessed when selecting firefighters.

3.3 Observations and recommended improvements

Based on the results of the literature review, workshop with NZFS subject matter experts, and survey of senior NZFS staff, it is recommended that the NZFS use the following competencies for selecting firefighters, as they have been statistically demonstrated to represent the range of skill requirements important to the firefighter role.

- Drive, Energy, and Achievement Focus
- People and Team Work Skills
- Applied Problem Solving Skills
- Communication Skills
- Physical Fitness

Please refer to Appendix E for a full description of the revised competency model.

In addition to evaluating the content and structure of the competency model, improvements to how the competency model is used were also considered. The assessment research literature suggested a number of

improvements that could be made to how the competency criteria were applied (i.e. during the selection process). Table 4 outlines observations of how the competency model is currently applied and recommended improvements.

Table 4

Observations and Recommended Improvements to the Application of Firefighter Selection Competencies

Observations: Selection Competencies	Recommended Improvements
Use discrete competency criteria	
<ul style="list-style-type: none"> ■ Competency indicators repeatedly overlap (e.g. 'Demonstrates an awareness of and sensitivity towards other cultures' and 'Positive attitude towards cultures different from own'). Consequently, applicants may be assessed against the same criteria more than once within a particular selection test. 	<ul style="list-style-type: none"> ■ Ensure that each competency criterion assesses a different skill, ability, or attitude (i.e. there is no overlap between competency criteria).
Provide specific and clear competency criteria	
<ul style="list-style-type: none"> ■ Some current competency criteria are vague and open to a range of interpretations (e.g. 'Able to participate', 'Displays complete professionalism', and 'Balances personal and professional life'). Consequently, assessors may interpret the criteria differently to their intended purpose. 	<ul style="list-style-type: none"> ■ Ensure that each competency criterion clearly describes a specific skill, ability, or attitude so that each are interpreted correctly.
Assess competency criteria by more than one selection test	
<ul style="list-style-type: none"> ■ Currently, each selection test assesses a different set of competency criteria for each competency (i.e. a competency criterion is never assessed by more than one selection test – please refer to Appendix A). This has the potential to decrease the reliability of assessment ratings (because the criterion is only assessed once). 	<ul style="list-style-type: none"> ■ Assess each competency criterion by more than one selection test, where possible, to improve the reliability of observations of that skill.

Observations: Selection Competencies	Recommended Improvements
Omit competency weightings	
<ul style="list-style-type: none"> ■ Currently, the selection competencies are weighted according to their perceived importance to the firefighter role (e.g. 'Being a Team Player' ratings are multiplied by three). Because these weightings have not been statistically verified (i.e. there is no evidence for their differential impact on firefighter performance), it is inappropriate to use them to modify applicant ratings. 	<ul style="list-style-type: none"> ■ Assign each competency an equal value when calculating applicants' ratings.

Summary of recommendations: NZFS firefighter selection competencies

In summary, it is recommended that:

1. The NZFS assess firefighter applicants on the following competencies that have been identified as critical to successful firefighter performance:
 - Drive, Energy, and Achievement Focus;
 - People and Team Work Skills;
 - Applied Problem Solving Skills;
 - Communication Skills; and
 - Physical Fitness.
2. Each competency criterion assesses a different skill, ability, or attitude, so that there is little overlap between criteria.
3. Each competency criterion clearly describes a specific skill, ability, or attitude to reduce the need for interpretation.
4. Where possible, each competency criterion is assessed by more than one selection test, to provide a range of observations of that skill.
5. Do not differentially weight each firefighter selection competency when making assessment ratings, given that there is no evidence for the differential impact of the different competencies on firefighter performance.

4. Evaluation of the current firefighter selection process

This section describes the in-depth review conducted on the NZFS's current firefighter selection process. The review is based on:

- Fire Service literature (including international Fire Services' selection processes, with a particular focus on Fire Services in Australia, England, America, and Europe);
- Psychological/assessment literature; and
- Observations of the selection process 'in action'.

The first part of this section describes and evaluates the NZFS's essential and desirable pre-entry characteristics. Please note that this report does not include specific recommendations on medical, optometry, or security standards. The second part of the section describes the current firefighter selection process, and evaluates each selection test in turn.

4.1 NZFS pre-entry characteristics

Essential pre-entry characteristics

The NZFS has a number of entry prerequisites at the firefighter level, which are common to those used by Fire Services in other countries. These pre-entry requirements reflect the skill requirements of the firefighter role. Prior to being offered employment, applicants have to meet the following standards:

- **Competency Standards** – As is common to the selection processes of all Fire Services, only those NZFS applicants who achieve the required standard on each of the selection tests are offered employment. These standards are described in the following sections of the report.
- **Educational Standards** – As is recommended by the European Firefighter Vocational Survey Working Group, the NZFS does not apply any minimum educational level requirements. Rather, educational prerequisites are currently indicated by applicants' scores on written and numerical skills selection tests.

A number of Fire Services worldwide have minimum educational standards in addition to educational testing. For example, the Fire and Emergency Services Authority of Western Australia require completion of Year 10 high school, with at least 8 'C' grades (including Mathematics and English), or a pass on a 12-month TAFE pre-apprenticeship program.

Not setting minimum educational level requirements is beneficial for a number of reasons. Firstly, it ensures that the Fire Service has a greater initial pool of applicants to consider for the firefighter role and for more senior roles in future. Secondly, it does not discriminate against applicants who may have performed poorly in school, but have since excelled in other areas (e.g. vocational courses, etc). Thirdly, educational qualifications do not necessarily predict firefighter success, so selecting applicants on the basis of their educational qualifications is inappropriate. Finally, given the changing nature of qualifications in New Zealand (e.g. the National Certificate in Educational Achievement), and a number of people from other countries applying to be firefighters, it is difficult to compare applicants on their educational qualifications. In light of these reasons, it is recommended that the NZFS continues to not set a minimum educational standard for firefighter applicants.

- **Medical Standards** – Undergoing a medical examination is a common practice for prospective firefighters worldwide. Each applicant must complete a medical questionnaire during the application process. A Medical Officer reviews the questionnaires of applicants who have been interviewed and deemed suitable for employment. Should an applicant's questionnaire indicate any medical condition, they are required to obtain reports of their medical condition from a specialist, and their suitability is again reviewed. Applicants are then required to undergo a full medical examination with their own General Practitioner. While no one medical condition precludes entry into the Fire Service, the following conditions would generally prevent employment as a firefighter:
 - Asthma;
 - Hypertension;
 - Diabetes;
 - Epilepsy;
 - Hearing disorders;
 - Shoulder and back pain.
- **Optometry Standards** – As for the vast majority of international Fire Services, applicants to the NZFS have to undergo an eyesight test during their full medical examination. The standards include:
 - A minimum standard of 6/9 on the Snellen Chart, unaided or corrected (with contact lenses) in both eyes.
 - A colour perception standard 'A'.

While a test of colour perception is typical of firefighter selection processes, it seems there is some variation in tests of visual acuity. Certain Fire Services (e.g. South Wales Fire Brigade) require visual acuity of 6/6 in each eye, and some also measure field of vision (e.g. South Yorkshire Fire and Rescue Service).

- **Physical Standards** – All Fire Services worldwide require applicants to complete a physical test during the selection process. NZFS applicants are required to complete a number of job-related scenarios, and a strength test.
- **Security Standards** – All international Fire Services complete a screening of applicants, generally to eliminate applicants who have convictions for arson and dishonesty crimes. While having a criminal record does not preclude employment as a firefighter, the NZFS suggests that applicants with the following convictions are not suitable for entry:
 - Any conviction for arson;
 - A conviction in the last 10 years for sexual-related crimes, theft, fraud, perjury, misusing information, and other dishonesty crimes; and
 - Any conviction in the last five years.

A number of Fire Services (e.g. Queensland Fire and Rescue Authority) indicate the specific criminal convictions, similar to those outlined by the NZFS above, that would prevent employment as a firefighter. In the United States, some Fire Services (e.g. New Baltimore Fire Department, Denver Fire Department) explicitly exclude applicants who have felony or misdemeanour convictions, or dishonourable discharges from the military (e.g. Dallas Fire-Rescue).

In addition to the six pre-entry requirement standards outlined above, the NZFS requires applicants to be either a New Zealand or Australian citizen, or a permanent resident. Being a citizen or resident of the country concerned is a common firefighter entry requirement throughout the world. Fire Services throughout the United States appear to require applicants to be US citizens, and in most cases require applicants to be residents of the town in which they are applying to be a firefighter (e.g. Hanover Fire Department).

Desirable pre-entry characteristics

The following skills are indicated by the NZFS as desirable, rather than essential, requisites to applying to be a firefighter. At present, applicants possessing these skills are favourably rated during the application process.

- **Hold a current Heavy Transport License** – The NZFS is relatively unique in that it does not require applicants to have any drivers' licence endorsements. Several other Fire Services worldwide (e.g. Tasmania Fire Service, Northern Territory Fire and Rescue Service, Queensland Fire and Rescue Authority, Cornwall County Fire Brigade) require endorsements for driving light rigid and medium rigid vehicles. It is not suggested that the NZFS prefers any applicants who hold a Heavy Transport License, as this may discriminate against people who have not had the opportunity to gain one (e.g. owing to financial constraints).
- **Hold a current Workplace First Aid certificate** – Very few Fire Services (e.g. Queensland Fire and Rescue Authority) require applicants to have a First Aid Certificate prior to applying to be a firefighter. Like the NZFS, it is usually a desirable entry requirement. Several UK Fire Brigades also prefer their applicants to have a current lifesaving certificate. It is appropriate that the NZFS does not favour any applicants who have a current First Aid Certificate, as first aid skills are taught during firefighter recruit training.
- **Have knowledge of languages other than English** – The NZFS sees knowledge of languages in addition to English as a desirable applicant characteristic, owing to the increasingly diverse population of New Zealand. A review of other Fire Services throughout the world indicates that this is not a skill of significant priority. To assist firefighters to better relate to New Zealand's diverse population, it is appropriate that the NZFS favourably rate applicants who have knowledge of a language in addition to English.

Unlike many Fire Services, the NZFS does not have any age restrictions on entering the Fire Service. This is presumably to ensure that the service does not discriminate against age when assessing the suitability of applicants. Several Fire Services worldwide specify a minimum age of 18-years (e.g. Bluffton Fire Department, Warwickshire Fire and Rescue Service), and some American Fire Services have a minimum age of 21 (e.g. Bowling Green City Fire Department), which presumably is to account for university courses in firefighting that applicants are encouraged to complete prior to applying. Several Australian Fire Services do not specify a minimum age limit (e.g. Fire and Rescue Western Australia, Northern Territory Fire and Rescue Service, Tasmania Fire Service), but it is implied by the completion of specific educational standards. Few Fire Services specify an upper age limit for submitting an application (e.g. Bowling Green City Fire Department does not permit applications from people over the age of 37). As is required by current New Zealand Employment Law, the NZFS should continue to accept applicants of any age.

Summary of recommendations: NZFS Pre-entry characteristics

In summary, it is recommended that the NZFS:

1. Continues to accept applicants with any educational qualifications, to increase the pool of suitable applicants for the firefighter role;
2. Does not prefer applicants who hold a Heavy Transport Licence or First Aid Certificate, to avoid discriminating against people who have not had the opportunity to gain them;
3. Prefers applicants who have knowledge of languages in addition to English, to be responsive to the changing demographics of New Zealand's population; and
4. Continues to accept applicants of any age, to be in accordance with New Zealand Employment Law.

4.2 Stages of the current NZFS selection process

Applicants have to complete a number of assessments prior to being selected as a recruit firefighter. As shown in Figure 2, applicants who fail to meet the minimum criteria after each selection stage, with the exception of the PAC, are excluded from progressing to the next stage of the selection process.

Typically, the NZFS receive between 400 and 600 applications during one recruitment round. Approximately 59% of applicants are short-listed to complete the written and numerical skills testing. Around 55% of applicants who complete the written and numerical skills tests are short-listed to attend the Pre-Entry Physical Testing (PPT). The PPT has a failure rate of only 17%, so a large number of applicants are permitted to attend Practical Assessment Course (PAC). As the PAC is not used to short-list applicants, the same number of applicants also attend the interview. The NZFS aims to offer employment to approximately one third of applicants who are interviewed.

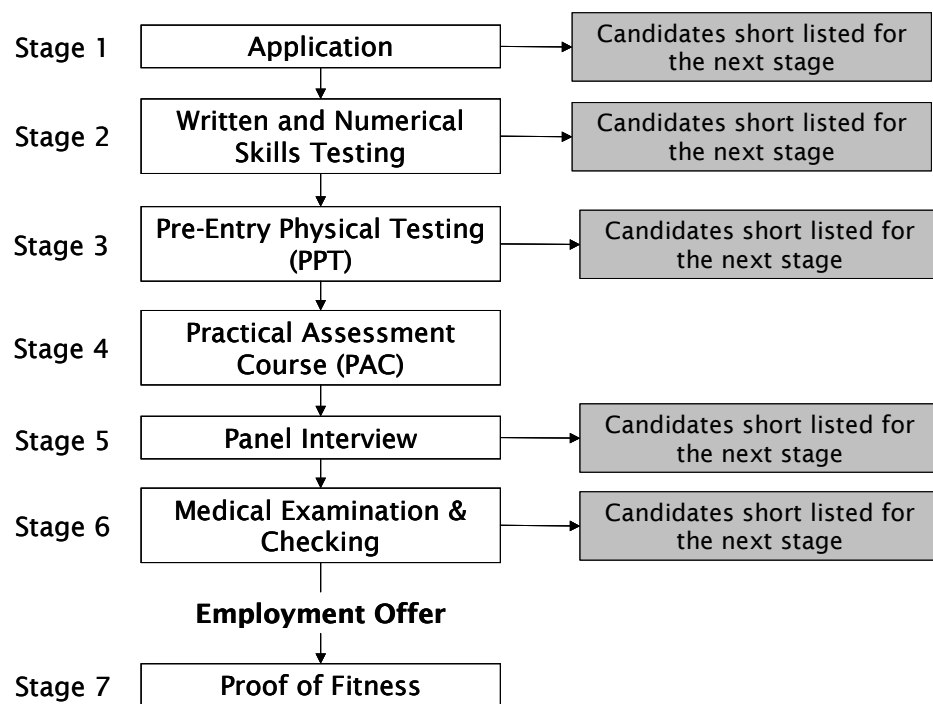


Figure 2. Stages of the NZFS firefighter selection process, in order.

At present, the NZFS usually holds two recruitment rounds each year. As applicants can submit a firefighter application form at any time, some applicants' application and selection process may take almost a year to complete. In addition, applicants may be required to travel to complete the various testing, given that the testing only takes place in three main cities (i.e. Auckland, Wellington, and Christchurch).

An evaluation of each selection process stage is described on the following pages. Each selection exercise is described and specific improvements and recommendations are identified.

Stage 1. Application

The current application process used by the NZFS is common to Fire Services in Australia, England, America, and Europe. People applying to be NZFS firefighters complete an Application Pack. This pack currently consists of:

- **An application form** – this requires applicants to indicate their general skills and experiences (e.g. educational qualifications, employment history, spare time activities, sports played, current fitness programme, club/association membership, volunteer work, hobbies, driver's licences, certificates, knowledge of other languages, etc). The

information collected in the NZFS application form is consistent with the information sought by most international Fire Services.

- **A self-assessment form** – this requires applicants to provide examples of how they have demonstrated a number of competency-related skills, important to the firefighter role (e.g. working with others, being inclusive, etc). The self-assessment form also provides an opportunity for the assessment of applicants' ability to communicate effectively in writing. Despite it being a valuable assessment exercise, relatively few Fire Services throughout the world require applicants to complete short answer-type questions.

Between 2001 and 2003, the application and self-assessment form screened out an average of 41% of applicants (data provided by the NZFS). Strengths of the current NZFS Application Pack are that it:

- **Is comprehensive.** Only applicants who are the most committed to becoming firefighters will invest the time and effort required to complete the Application Pack.
- **Requests important background information.** The application form questions request information that is valuable in assessing the suitability of applicants' work histories, qualifications, and spare time activities.
- **Asks behavioural questions relating to firefighter competencies.** The self-assessment form requires applicants to provide recent and concrete examples of where they have demonstrated relevant skills. However, currently applicants are asked to respond to competency indicators (e.g. 'working with others') and brief questions (e.g. What was the situation?), rather than comprehensive behavioural questions (e.g. Can you describe a recent situation in which you had to deal with people who were different to yourself?), which enable assessors to gain a clear and thorough picture of the applicant's skills in a particular area.

The current rating guide for assessors:

- **Includes a five-point rating scale.** A five-point rating scale allows for greater variability in scores given to applicants. This assists in differentiating between the capabilities of applicants.
- **Provides assessors with definitions of excellent, good, and poor responses.** This assists assessors to use the same criteria to assess responses.

A review of the psychological assessment literature highlighted a number of areas in which the current Application Pack could be improved. For example, the current Application Pack requires applicants to provide responses to several unclear questions, when a few clearly specified

questions would be sufficient. The NZFS does not provide applicants with comprehensive instructions or guidelines on what or how much information to provide, or how to structure the information. Perhaps most importantly, NZFS staff assessing Application Packs are given limited training and few guidelines or criteria on which to assess and rate Application Packs. For these reasons, a number of changes were recommended to the Application Pack, which are outlined below.

Observations and recommended improvements

The key changes to the application process concern modifying the Application Pack, and Rating Guide for the Application Pack, and including Instructions for Completing the Application Pack. Copies of these are included in the Materials Supplement.

While the recommended Application Pack looks the same as that currently in use, there have been slight modifications to the order of information requested, and the questions that are asked of applicants. The questions in the self-assessment section of the Application Pack have completely changed; they now assess the five new firefighter competencies and are designed to better elicit information from applicants.

The Instructions for Completing the Application Pack is a new resource for this stage of the selection process. It is a step-by-step guide describing the sorts of information applicants should provide in their application. It also provides applicants with response examples, so they understand the level of detail required of their responses.

The Application Pack Rating Guide has been significantly changed. This revision assesses every piece of information that applicants provide in their Application Pack, and provides clear and comprehensive criteria against which responses can be rated. This is designed to enhance the objectivity of the assessment of Application Packs. There are also instructions for assessors on how to rate and short-list Application Packs, to ensure different assessors take the same approach to rating responses.

The specific improvements recommended are outlined in Table 5.

Table 5

Observations and Recommended Improvements to the Application Pack and Rating Guide

Observations: Application Pack	Recommended Improvements
Provide applicants with instructions on how to complete the Application Pack	
<ul style="list-style-type: none"> ■ The Application Pack requires applicants to answer a number of questions, with little guidance or instruction as to how the Application Pack should be completed, or the types of expected responses. 	<ul style="list-style-type: none"> ■ Provide applicants with a separate instruction booklet, which describes how the Application Pack should be completed. This instruction booklet could include response examples for all of the Application Pack questions, so that applicants are clear what is expected of them.
Request targeted, specific information	
<ul style="list-style-type: none"> ■ The self-assessment form asks applicants to provide examples of how they have demonstrated the skills described by 21 competency criteria. Assessing such a high number of skills in the self-assessment form reduces the depth and quality of the information received. 	<ul style="list-style-type: none"> ■ Ask only one or two behavioural questions per competency in the self-assessment form. Increasing the specificity of the information required will yield more valuable information.
Ask clear and complete behavioural questions	
<ul style="list-style-type: none"> ■ The self-assessment form requires applicants to respond to competency criteria, which do not provide a specific or clear description of the information being sought. These competency criteria are open to interpretation, and may yield a range of responses that do not reflect the competencies actually being assessed. For example, the competency 'Being a Team Player' lists the following criteria: Working with others, Being inclusive, Able to participate. Such criteria provide insufficient guidance for applicants to respond to the requests to describe; "What was the situation/task? What did you do? What was the result?" 	<ul style="list-style-type: none"> ■ Request applicant information in full sentences (e.g. "Can you describe a recent situation in which you had to deal with people who were different to yourself? What was the situation? What did you do? What was the result?"), so that applicants' responses are correct and comprehensive.

Observations: Application Pack	Recommended Improvements
Request short answer responses to behavioural questions	
<ul style="list-style-type: none"> ■ The self-assessment form requires applicants to provide bullet-point responses to the behavioural questions. Such responses may not provide information of sufficient detail to enable sound assessments to be made. 	<ul style="list-style-type: none"> ■ Ask applicants to provide full-sentenced, short answer responses to the behavioural questions, so as to: 1) ensure that response brevity does not disadvantage applications; and 2) provide an opportunity to assess applicants' written communication skills. In addition, provide response examples so applicants understand the level of response detail required.
Observations: Application Pack Rating Guide	Recommended Improvements
Enhance the clarity and specificity of the assessment guidelines	
<ul style="list-style-type: none"> ■ The current Application Pack requires applicants to provide a large amount of information that is difficult to objectively assess without clear instructions. This can introduce assessor bias (e.g. stereotyping on the basis of Application Pack information) and poor decisions (e.g. false positives where unacceptable applicants progress, and false negatives where acceptable applicants do not progress). 	<ul style="list-style-type: none"> ■ Provide clear instructions on how to rate the information provided by applicants. This should include clear criteria for assessing applicants' responses to all questions in the Application Pack. ■ Provide assessors with training in the rating of Application Packs to ensure they are clear about how to accurately and reliably rate responses. ■ Establish a peer review process, whereby a sample of Application Packs are regularly reviewed to ensure consistency.

Summary of recommendations: Application pack

In summary, it is recommended that:

1. A revised Application Pack is tailored to request information on the newly developed competencies;
2. Applicants are provided with detailed instructions on how to complete the Application Pack;
3. Self-assessment questions are couched in full sentences (e.g. 'Can you describe a situation in which you had to deal with people that were different to yourself?'), rather than in bullet-pointed form (e.g. 'Working with others'); and

4. Applicants are instructed to provide full-sentenced, short-answer responses to the self-assessment questions, to ensure that response brevity does not disadvantage applications and to provide an opportunity for the NZFS to assess applicants' written communication skills.

It is also recommended that NZFS assessors undergo in-depth training in the rating of the Application Pack (e.g. to ensure short-listing recommendations are soundly based). This training will be supported by an Application Pack Rating Guide, which will:

1. Provide clear and comprehensive instructions on how to assess, rate, and short-list applicants; and
2. Provide clear and comprehensive criteria on which to objectively assess all information provided in the Application Pack.

Stage 2. Psychological Testing

Aptitude tests

Currently, applicants whose applications have been successfully short-listed are invited to complete three cognitive ability tests. At present, the NZFS uses three aptitude tests published by the Australian Council for Educational Research (ACER) to assess the 'Learning and Retention' competency. These tests are the:

- **Numerical Awareness Test:** Requiring the locating and correcting of errors in receipts, timetables, and inventories.
- **Spelling and Grammar Test:** Requiring the editing of correspondence, reports, and memoranda.
- **Word Meanings Test:** Requiring spotting and correcting errors of vocabulary in letters, minutes of a meeting, and notices.

The three tests are part of a battery of tests originally designed for selecting clerical staff, and have been demonstrated as valid in the selection of store persons, administrative, and junior management positions. Between 2001 and 2003, these aptitude tests eliminated 45% of people from the firefighter selection process. Applicants who are short-listed from the aptitude tests are invited to complete the Physical Pre-Entry Test in Auckland, Wellington, or Christchurch.

Cognitive ability tests have been determined to be one of the most valid predictors of future job performance for a wide range of jobs (Schmidt & Hunter, 1998). It is not uncommon for job applicants across a wide variety of industries to complete problem-solving tests designed to assess their level of intellectual ability. Most Fire Services throughout the world

employ standardised tests to assess literacy and numeracy. However, several Fire Services are also using standardised tests to measure the ability to interpret tabulated information and passages of information (e. g. Bowling Green City Fire Department, New York State Fire Department, Minnesota State Fire Department, South Wales Fire Brigade), abstract reasoning (e.g. Western Australia Fire and Rescue, Northern Territory Fire and Rescue Service), and spatial ability (e.g. Bowling Green City Fire Department, Tasmania Fire Service, South Wales Fire Brigade).

Some of the advantages of the current NZFS aptitude tests are that they:

- Appear to be pitched at an appropriate level of difficulty;
- Have been shown by research to be reliable measures of the skills they are designed to assess; and
- Are rated as either pass or fail (where an applicant has to attain a certain score to be short-listed), as opposed to ranked or banded (where an applicant's scores must be ranked among the top performers to be short-listed). Setting the passing score at a level comparable to the level of general intellectual ability required to be a firefighter, minimises the risk of the NZFS rejecting suitable applicants (and discriminating against minority groups).

In light of the recommendations made by psychological assessment research, the use of psychological testing within the NZFS could be improved in number of ways. Primarily, the aptitude tests that are currently being used by the NZFS to assess potential firefighters assess administrative and clerical ability, rather than general intellectual ability. As tests of general intellectual ability are more predictive of overall on-the-job performance, it is appropriate that the NZFS replaces the aptitude tests with tests designed to assess general intellectual ability. The following tests provide a comprehensive measure of general intellectual ability:

- **ACER PL & PQ:** These tests are designed to measure general intelligence as demonstrated by the ability to see relationships and to solve problems. The ACER PL constitutes the linguistic section of the test. Its item types include verbal analogies, vocabulary, similarities and verbal reasoning. The ACER PQ constitutes the quantitative section of the test. Its item types include number series, arithmetic reasoning, and number matrices.
- **Standard Progressive Matrices Test:** This test measures the ability to reason symbolically, think abstractly and the capacity to solve novel or non-routine problems. All of the items present visual patterns that require matching and completion.

The main advantage of using the above tests is that they are highly correlated with other measures of intelligence such as IQ scores. In

addition, the Standard Progressive Matrices Test assesses general intellectual ability in a culture fair manner (as it has no written instructions), and is also a measure of spatial ability (which was identified as one of the revised competency criteria for the NZFS).

Other testing issues

Cognitive Ability Testing and Ethnic Groups

A significant amount of research (e.g. Roth, Bevier, Bobko, Switzer, & Tyler, 2001) has been conducted on whether cognitive ability tests discriminate against minority ethnic groups, owing to their sometimes decreased access to education and employment opportunities. Recent New Zealand research (Guenole, Englert, & Taylor, 2003) suggests that, on average, Maori score slightly lower than European job applicants on measures of verbal reasoning and numerical business analysis. Their study found no differences between Maori and European applicants on a measure of general numerical reasoning. Roth et al. (2001) determined that there is more variation in cognitive ability test scores within, rather than between, ethnic groups (i.e. high scorers on cognitive ability tests can be found in all ethnic groups). Based on research evidence, it is appropriate that the NZFS retain psychological testing, and the pass/fail assessment of scores. Because the three scores are assessed in combination (i.e. a failed score on one test does not automatically discount an applicant), there are less likely to be any significant disadvantages for ethnic minority groups.

Personality testing

Although a number of Fire Services throughout the world are adopting personality tests to assess people's attitudes, dispositions, and behavioural styles (e.g. Bowling Green City Fire Department, Western Australia Fire and Rescue, Northern Territory Fire and Rescue Service), there are a number of important issues that the NZFS should consider before using personality testing for the firefighter role.

Firstly, research and experience show that the accuracy with which personality tests assess personality is modest at best, and that the test results are best evaluated by seeking evidence to verify or disprove their findings. While personality testing can provide useful information about an applicant's work preferences and styles, it would be inappropriate to short-list applicants based on their personality profile, or 'fit' with an ideal firefighter profile. If personality tests were used in the selection of firefighters, they would best inform questions for interviewing (e.g. "Your personality test profile suggests you may not always set yourself challenging goals. Can you tell us about some challenging goals you have recently set yourself?"), or referee checks.

Secondly, suitably qualified people are required to administer, score, and interpret the personality tests. An extensive amount of training and minimum qualification levels are required to be able to administer, score and interpret many personality tests. Personality testing could not be implemented into the selection process for firefighters unless a number of staff were suitably qualified to perform this function.

Finally, any personality tests used would need to assess the specific attitudinal dimensions identified by the firefighter competencies (e.g. display energy, initiative, and drive, expect high standards of self and others, display an improvement focus, be genuinely empathetic, etc). It would also be important to select a personality test that could be administered to applicants in a group situation, given to applicants to complete at their leisure, or completed on-line.

Given the practical realities of personality testing (i.e. the need to have qualified staff trained in the interpretation of the tests, and in interview techniques to verify the test findings, etc) personality testing is not appropriate for the NZFS at this stage.

Observations and recommended improvements

The key changes recommended to the testing stage of the NZFS selection process involve replacing the current tests with instruments designed to assess general intellectual ability (i.e. the ACER PL & PQ, and the Standard Progressive Matrices tests) and modifying the way in which the tests are administered and results retained in the NZFS.

A more specific description of the recommended improvements to the NZFS's use of psychological tests is outlined in Table 6.

Table 6

Observations and Recommended Improvements to the Psychological Tests

Observations: Psychological Testing	Recommended Improvements
Assess general intellectual ability	
<ul style="list-style-type: none"> ■ The three tests currently being used in the selection of firefighters are assessing clerical and administrative ability, rather than general intellectual ability. Consequently, the current tests are screening applicants on skills that are less important to the firefighter role. ■ Currently, none of the tests being used are entirely suitable for testing applicants from different cultures in a fair manner. These tests may be discriminating against applicants from target minority groups. 	<ul style="list-style-type: none"> ■ Use the ACER PL & PQ in conjunction with the Standard Progressive Matrices Test to comprehensively assess general intellectual ability. ■ The ACER PL (linguistic ability) and PQ (quantitative ability) have been revised for a New Zealand context, and have been used extensively in this country for several years. New Zealand fifth and sixth-form normative data are available. The ACER PL and PQ are both highly correlated with other measures of general intelligence (e.g. IQ tests) and on-the-job performance. ■ The Standard Progressive Matrices test is a non-verbal test that, when used with the ACER PL and PQ tests, provides a superior assessment of general intellectual ability. It also assesses general intellectual ability in a culture-fair manner, as the test booklet contains no written words. This should assist in the inclusion of some of the NZFS's target groups (e.g. Maori and Pacific Island people) for short-listing. It is also highly correlated with other measures of intelligence and on-the-job performance.
Assess spatial ability using a standardised test	
<ul style="list-style-type: none"> ■ Currently, firefighter applicants are not tested on their spatial ability. The analysis of survey data indicated that spatial ability is an important facet of successful firefighter performance. A recent meta-analysis (Barrett, Polomsky, & McDaniel, 1999) suggests that using a composite of cognitive and mechanical/spatial ability tests is the best method of predicting firefighter performance. 	<ul style="list-style-type: none"> ■ Use the Standard Progressive Matrices Test to assess spatial ability (as part of the assessment of general intellectual ability). Although this test primarily assesses intellectual ability, it also evaluates spatial ability.

Observations: Psychological Testing	Recommended Improvements
Establish a maximum number of times the cognitive ability tests can be sat	
<ul style="list-style-type: none"> ■ At present, applicants who fail to pass the cognitive tests are permitted to reapply as many times as they wish. This results in some applicants sitting the cognitive ability tests several times without passing. Consequently, NZFS staff spend valuable time assessing the Application Packs and cognitive ability tests of people who are unlikely to pass the cognitive ability tests. 	<ul style="list-style-type: none"> ■ Allow applicants who fail the cognitive ability tests a further two chances to pass the tests. As the tests assess general intellectual ability, it is unlikely that an applicant who has failed the tests three times in a row could subsequently improve their scores. Applicants who fail the cognitive tests for the first time, and reapply, could be referred to the 'First Steps' programme.
Ensure appropriate norms are used to score tests	
<ul style="list-style-type: none"> ■ Applicants' test results are compared against a UK working population sample, rather than against a sample of New Zealanders applying to be firefighters. Consequently, applicants' feedback on their tests results is likely to be inaccurate (i.e. a score in the 50th percentile may be good when compared to one set of norms, and poor when compared to another set of norms). 	<ul style="list-style-type: none"> ■ Build a normative database that consists of firefighter applicants that have sat the cognitive tests. There would be enough data from a single recruitment round to serve as the database for subsequent test scoring. Data could be added to the database after each recruitment round, to provide more comprehensive normative data. Converting applicants' scores into percentiles will allow the National Recruitment Manager to provide more informative feedback to applicants (e.g. an applicant can be told that his/her score on a test was better than 74% of people who apply to be firefighters).
Train NZFS Human Resources staff to administer and score the cognitive ability tests	
<ul style="list-style-type: none"> ■ At present, the NZFS allows operational staff to administer the aptitude tests, following limited training as to how to administer and score the tests. The recommended cognitive ability tests require suitably trained people to administer, score, and interpret them. 	<ul style="list-style-type: none"> ■ Train NZFS Human Resource staff in the administration and scoring of cognitive ability tests. This will ensure that; 1) suitably qualified people administer and score the tests (the recommended tests require basic training in test administration and interpretation); 2) the confidentiality of the process and results are maintained; 3) the testing process remains consistent throughout the country; and 4) the risk of the tests being widely distributed in the regions is minimised. Applying such a rigorous testing process assists the NZFS to mitigate the risk of legal challenges of their testing procedures.

Summary of recommendations: Psychological testing

It is recommended that the NZFS:

1. Replace the current administrative ability tests with the ACER PL & PQ, and the Standard Progressive Matrices tests to directly assess the general intellectual ability of firefighter applicants;
2. Develop norms for these tests over time by recording firefighter applicants' (both successful and unsuccessful) test scores at each recruitment round. Note: prior to the normative database being developed (i.e. for the first recruitment round), the NZFS could use New Zealand Fifth-Form norms for the ACER PL & PQ, and UK working population norms for the Standard Progressive Matrices test;
3. Inform applicants that they are permitted a maximum of three attempts at the cognitive tests, to minimise the amount of resources used assessing the Application Packs and cognitive ability tests of people who are unlikely to pass the cognitive ability tests;
4. Assign Human Resources staff responsibility for administering, scoring, and interpreting the cognitive ability tests, and regularly updating the normative database and review the test cut-off scores; and
5. Delay using personality testing in the selection of firefighters until dedicated and qualified staff can be assigned the task of administering, scoring, and interpreting personality tests. This will ensure that personality testing is conducted legitimately and adds value to the assessment process.

Stage 3. Physical Pre-Entry Testing (PPT)

Currently, applicants who pass the cognitive ability tests are invited to complete the Physical Pre-Entry Test (PPT) in Auckland, Wellington, or Christchurch. The PPT currently used by the NZFS assesses the 'Physically Competent' competency. The purpose of the testing is to determine whether applicants have the strength, endurance, and dexterity to perform crucial functions of the firefighter role.

Applicants who attempt the PPT in are given a scheduled time-slot to individually complete the test, and are involved in testing for no more than an hour. Between 2001 and 2003, 17% of people who completed the PPT failed the test. It is assumed that applicants who pass the PPT are able to meet the on-the-job physical demands of the firefighter role. The PPT contains a combination of job-related scenarios, and strength and endurance tests, which are outlined in Table 7. These scenarios are completed whilst wearing a breathing apparatus set (approximately 16kgs), helmet, boots, and gloves.

Table 7

Job-Related Scenarios and Strength and Endurance Tests Currently Used by the NZFS

Job Related Scenarios (to be completed within six and a half minutes)	Strength and Endurance Tests (to be completed to fatigue)
<ul style="list-style-type: none"> ■ Hose Advance ■ Stair Climb (with load) ■ Carry ■ Hoisting ■ Victim Rescue 	<ul style="list-style-type: none"> ■ Dead Lift ■ Shoulder Press ■ Hand Grip ■ Press Up

The assessment of physical competence for firefighter roles occurs worldwide, using a range of different strategies. A review of nine international Fire Services showed the use of more than 20 job-specific tasks alone. The most and least commonly used job-specific tasks are listed in Table 8.

Table 8

Most and Least Commonly Used Job-Specific Tasks Worldwide

Most commonly used job-specific tasks	Least commonly used job-specific tasks
<ul style="list-style-type: none"> ■ Stair Climb ■ Hose Drag ■ Shuttle Run 	<ul style="list-style-type: none"> ■ Hose Rolling ■ Rope Pull ■ Over and Under Bars

Most Fire Services use a combination of tests representative of the Job-Related Scenarios used by the NZFS. A number of American Fire Departments, and the Queensland Fire and Rescue Authority, use the recently popular Candidate Physical Ability Test (CPAT). The CPAT consists of eight job-specific tasks that have been extensively researched and validated by its developers. They assert that the CPAT assesses a candidate's ability to perform the essential duties of a firefighter, and can differentiate between applicants who do and do not possess this ability (International Association of Fire Chiefs, 1999). With the appropriate training, assessors can reliably assess candidate performance on the CPAT (International Association of Fire Chiefs, 1999). A study conducted by the Indianapolis Fire Department found that CPAT pass rates were 50% for

women, and 90% for men (Muegge, Zollinger, Saywell, Moffatt, Hanify, & Dezelan, 1999).

Few Fire Services (like the NZFS) assess applicant strength along with performance on job-specific tasks (e.g. South Yorkshire Fire Brigade, South Wales Fire Brigade). Despite this apparent difference, research generally endorses the use of muscular strength testing to complement job-specific tasks (Gledhill & Jamnik, 1992).

Strengths of the current PPT are that:

- **The Job-Related Scenarios have a high level of face-validity.** They appear to be measuring important facets of the firefighter role, and simulate the activity of a fire scene (e.g. by wearing firefighter gear, not allowing applicants to rest between the activities, etc); and
- **The PPT has clear guidelines on how to rate an applicant's performance** (i.e. completes/does not complete). Consequently, the probability of rater error is reduced.

However, there are areas in which the PPT could be significantly improved. In addition, informal discussions with NZFS staff suggest that both male and female firefighters want equal PPT performance standards for men and women.

Observations and recommended improvements

Dr Alan Walmsley, Senior Lecturer in the Institute of Food, Nutrition, and Human Health at Massey University, has had extensive involvement in the development of the PPT. He undertook validation testing of the PPT in 2001, and recently reviewed the performance standards for male and female applicants (Walmsley, 2003). Should Dr Walmsley's recommendations be implemented, it is recommended that the:

1. PPT is regularly reviewed to determine whether the strength and endurance tests and job-related scenarios adversely impact female applicants' performance.
2. Cut-off scores are regularly reviewed to ensure that the PPT is not excluding applicants who could successfully perform the firefighter role.
3. NZFS conduct a comprehensive job analysis of the key physical functions firefighter role in the future. This can then ensure that the PPT simulates these functions as closely as possible.

Stage 4. Practical Assessment Course (PAC)

Currently, applicants who pass the PPT are invited to attend a day-long Practical Assessment Course (PAC), held in Auckland, Wellington, and

Christchurch. This PAC comprises of 18 workstations that applicants must complete either in teams, pairs, or individually. These workstations usually take 20 minutes to complete, and can cater for up to 36 applicants on one testing day.

A review of Fire Services internationally indicates that this particular test is unique. Few, if any, Fire Services conduct any practical or group testing in addition to the Physical Test. Advantages of the PAC in its current form are that it:

- Provides an ideal opportunity to observe how well applicants interact in a team situation;
- Includes a 'Peer Review Form', which provides an additional measure of the 'Being a Team Player' competency;
- Provides competency criteria to assist in rating performance; and
- Provides applicants with a realistic preview of the firefighter role (i.e. it highlights the importance of self-discipline and teamwork, etc).

Assessment research indicates several potential improvements to the way in which the PAC is applied. For example, the current PAC appears to repeatedly assess skills that are adequately assessed elsewhere. Assessors are not provided with sufficient instructions on how to consistently run workstations, or given adequate criteria on which to assess applicants' performance. A seven-point rating scale is used at each workstation to assess applicants, where either a five-point or two-point rating scale would be more appropriate. Observations of the PAC 'in action' have also highlighted a need for assessors to receive in-depth training on how to consistently and accurately assess applicant performance. Finally, in addition to addressing applicants in specific skill areas, the PAC could also be used to inform interview questions (as every applicant who attends the PAC also attends an interview). For these reasons, a several changes were made to the application of the PAC, which are outlined below.

Observations and recommended improvements

While the structure and content of the PAC workstations themselves were considered sound, recommendations do suggest significant changes to the way in which the workstations are conducted and applicants assessed. The suggestions include documentation of clear administration instructions and exercise rating processes, and the training of assessors in the consistent administration of the PAC exercises.

Clear and comprehensive instructions for administering each PAC workstation have been developed (please refer to the Materials Supplement). These instructions include details that were not included in the instructions currently used (e.g. what assessors should say to

applicants, a list of all resources required and how they should be used, etc). The process of rating applicants has also changed significantly. Assessors will now have clear instructions on how to rate applicants, and are provided with a number of criteria on which to rate applicant performance.

The biggest opportunity for improving the predictive validity of the PAC is in ensuring the consistent and correct application of the assessment materials. Assessors will need to be thoroughly trained in the running of workstations and the assessment of applicants, and supported during the new process. It is suggested that the correct administration of each workstation is role-modelled during training, by showing assessors videotaped recordings of the workstations.

Specific improvements that could be made to the current PAC are described in Table 9.

Table 9

Observations and Recommended Improvements to the Practical Assessment Course

Observations: PAC	Recommended Improvements
Reduce the number of PAC workstations	
<ul style="list-style-type: none"> ■ The PAC contains a large number of workstations (i.e. 18 workstations) and appears to repeatedly assess skills that are adequately measured elsewhere (e.g. Teamwork is measured by 10 workstations). 	<ul style="list-style-type: none"> ■ Reduce the number of PAC workstations. Including just the following workstations will ensure a thorough assessment of the firefighter competencies, while making the best use of resources: Lecture, Heights Test, Practical Dexterity, Lagoon Crossing, Confined Spaces, Computer Skills, Conflict Resolution, Written Report, and Obstacle Course. (Note: the Clean Up exercise should still be performed, but not assessed).
Clarify rating criteria to ensure rating accuracy	
<ul style="list-style-type: none"> ■ Criteria on which to assess applicants are sometimes vague (e.g. 'Displayed excellent interpersonal skills'). Assessors may have different perspectives on what these criteria mean, and therefore assess applicants on different elements. 	<ul style="list-style-type: none"> ■ Include comprehensive criteria on which to assess applicants, so assessors know exactly which skills, behaviours, and attitudes are indicative of a high assessment rating.

Observations: PAC	Recommended Improvements
Clarify rating criteria to ensure rating accuracy, continued	
<ul style="list-style-type: none"> ■ Applicants are being assessed against extraneous competencies (labelled 'Miscellaneous') that have not been included in the list of competencies critical to the firefighter role. This increases the risk of assessor bias influencing assessment ratings (e.g. through stereotyping, etc). 	<ul style="list-style-type: none"> ■ Assess applicants against only those competencies identified as critical to firefighter performance (i.e. against the newly developed competencies).
<ul style="list-style-type: none"> ■ Although a Peer Review Form is used, there is no clear or consistent way in which the information provided by the form is used to supplement assessment ratings. 	<ul style="list-style-type: none"> ■ Use Peer Review information to inform ratings for the 'People and Team Work Skills' competency. Provide assessors with clear instructions as to how to use the data provided by the Peer Review Forms.
<ul style="list-style-type: none"> ■ Some workstations assess skills that are difficult to observe and rate consistently (e.g. assessing enthusiasm while delivering a 2-minute lecture). 	<ul style="list-style-type: none"> ■ Ensure all workstations assess skills that are easily demonstrated, observed, and rated throughout the workstation.
Design rating scales to suit the information provided by the workstation	
<ul style="list-style-type: none"> ■ Although a seven-point rating scale is used to assess applicants, assessors report finding this number of rating points unwieldy and tend to favour mid-point scores. 	<ul style="list-style-type: none"> ■ Reduce the number of rating points to five, and encourage assessors to use the full range of the scale.
<ul style="list-style-type: none"> ■ Some PAC workstations require a demonstration of mastery; i.e. successful completion or non-completion (e.g. Heights Test and Confined Spaces). A seven-point rating scale is currently used for these workstations, despite it being difficult to assign a wide range of ratings. 	<ul style="list-style-type: none"> ■ Use a modified rating scale for PAC workstations that require a demonstration of mastery (e.g. Heights Test and Confined Spaces). For these workstations, it is more appropriate to indicate whether the applicant completed the exercise or not, rather than assign a rating of competence.
Provide comprehensive instructions for assessors	
<ul style="list-style-type: none"> ■ Currently, instructions on how to run each workstation are brief and vague. For example, the 'Confined Spaces' workstation includes the following instructions: Follow guideline through BATB in pairs; Time 35 minutes; Assessors to make as much loud noise and banging as to make the environment uncomfortable. 	<ul style="list-style-type: none"> ■ Provide clear, comprehensive instructions on how to run each workstation. This will ensure that PAC workstations are consistently conducted around the country and over time.

Observations: PAC	Recommended Improvements
Provide comprehensive instructions for assessors, continued	
<ul style="list-style-type: none"> ■ There are no instructions on how to rate applicants' performance; assessors are simply given a rating sheet on which to assess applicants. The lack of assessment instructions increases the likelihood of assessment errors. 	<ul style="list-style-type: none"> ■ Provide assessors with comprehensive instructions and training in the assessment of applicants completing the PAC. ■ Perform regular assessment audits to ensure raters are conducting accurate and consistent assessments.
Short-list applicants based on their performance at the PAC	
<ul style="list-style-type: none"> ■ Although applicants' performance at the PAC is assessed and rated, currently these assessments and ratings are only used to inform interview questions, rather than select applicants for the interview. 	<ul style="list-style-type: none"> ■ Use PAC assessment ratings to select applicants for the interview. It is recommended that any applicant who fails to attain an average rating of three on any of the five competencies ('A good match to the criteria'), should not progress to the interview.

Summary of recommendations: Practical assessment course

It is recommended that:

1. The PAC is abbreviated to include only the workstations that comprehensively assess the targeted competency areas (i.e. Lecture, Heights Test, Practical Dexterity, Lagoon Crossing, Confined Spaces, Computer Skills, Conflict Resolution, Written Report, and Obstacle Course). The 'Clean Up' exercise should still be performed, but not assessed;
2. Assessors are provided with clear and comprehensive criteria on which to rate applicants, so they know exactly which skills, behaviours, and attitudes are indicative of a high assessment rating;
3. Applicants' performance is only assessed against competencies identified as critical to firefighter performance, to enhance the objectivity of short-listing decisions;
4. Peer Review Form data are used to inform the 'People and Team Work Skills' competency rating;
5. All workstations assess skills that are easily demonstrated, observed, and rated, to enhance the ease and accuracy of assessor ratings;
6. Assessors rate applicant performance on a five-point, rather than seven-point, rating scale to enhance the ease of rating;

7. Assessors are given clear and comprehensive instructions on how to run PAC workstations, so that the workstations are consistently conducted around the country over time;
8. Assessors are given in-depth training in the assessment, rating, and short-listing of applicants, to ensure consistency and accuracy;
9. Assessor ratings are regularly audited to ensure accuracy and consistency; and
10. PAC performance ratings are used to select applicants for the interview, as well as inform interview questions, to ensure that the information collected from this exercise is used to best effect.

Stage 5. Interview

Currently, all applicants who complete the PAC are interviewed. Usually operational staff from regions with firefighter vacancies conduct the interviews. The hour-long interview is intended to enable the panel to make judgements of applicants' organisational and regional fit, and confirm their suitability for employment.

The interview process is common across Fire Services internationally, and is generally the last stage of the firefighter selection process. As is the practice of the NZFS, applicants are usually interviewed by a panel of people. Strengths of the current NZFS interview are that it:

- Provides guidelines on some aspects of the interview structure and process (e.g. how much time to allocate to each part of the interview, how to rate responses, etc). However, anecdotal evidence suggests these instructions are largely overlooked;
- Includes a range of behavioural questions; and
- Uses anchored scales to assess interview responses.

A review of best-practice research, and discussions with NZFS personnel have identified some potential areas for improvement. For example, the current interview does not include behavioural questions and assessment criteria that reflect the revised firefighter selection competencies. At present, there is no section for interviewers to make note of any issues arising from the Application Pack and PAC for further investigation in the interview. Finally, interviewers are not provided with clear guidelines and training on how to assess and rate applicants. For these reasons, a number of changes were made to the interview, which are outlined below.

Observations and recommended improvements

The suggested changes to the current interview involve developing questions that reflect the new firefighter selection competencies (please

refer to the Materials Supplement), providing instructions on how to run the interview, training interviewers to conduct consistent interviews, and using specialist interviewers on each interview panel.

A number of behavioural questions have been developed for inclusion in the interview. These questions are designed to encourage applicants to provide the interview panel with the information they need to make an assessment of their suitability against the revised firefighter selection competencies.

A section has also been included at the beginning of the interview where interviewers can jot down notes relating to the applicant's Application Pack or PAC performance, for further investigation in the interview. Ideally, each interview panel would have approximately 15 minutes to review an applicant's Application Pack and PAC rating forms before their interview.

Detailed instructions on how to run the interview and assess applicants have been developed for interviewers, to enable them to consistently and accurately assess applicants. Interviewers will receive in-depth training in how to assess and rate applicants' interview responses against the newly developed criteria.

It is recommended that a team of at least three interviewers interview each applicant. This team should be led by at least one specialised interviewer, who should be responsible for the interview process, and leading the other interviewers through the assessment of the applicant.

The rationale for these recommended changes, and a more detailed description of the changes, are outlined in Table 10.

Table 10

Observations and Recommended Improvements to the Interview

Observations: Interview	Recommended Improvements
Increase the objectivity of assessment ratings	
<ul style="list-style-type: none"> ■ Discussions with Fire Service Personnel involved in interviewing applicants indicate that despite clear instructions on how to rate responses, applicant ratings are often made subjectively (i.e. based on interviewer’s preferences rather than interview criteria). 	<ul style="list-style-type: none"> ■ Provide interviewers with clear instructions on how to conduct the interview, and how to rate interview responses accurately and effectively. The importance of objectively rating the information interviewees provide could be emphasised during interviewer training. ■ Appoint at least one specialised interviewer (who will have received in-depth interviewing training) to each interview team. Their role will be to ensure the interview protocol is adhered to, and to lead the interview team through the assessment process. ■ Increase the number of interviewers to at least three Fire Service personnel. This will assist in a comprehensive assessment of interviewees, and minimise the risk that important information is overlooked (as there would be more observers of the behaviours under investigation). ■ Perform regular assessment audits to ensure interviewers are making accurate and consistent assessment ratings. The NZFS Human Resources department could provide this function, and check that interviews are being conducted in accordance with NZFS policy. ■ Provide assessors with comprehensive instructions and training in the interviewing of applicants.
Encourage interviewers to use information obtained from the Application Pack or Practical Assessment Course	
<ul style="list-style-type: none"> ■ There are currently no mechanisms to ensure that any issues arising from the Application Pack or PAC are further investigated in the interview. Probing such issues in the interview would provide valuable information (i.e. clarification) for the interview panel. 	<ul style="list-style-type: none"> ■ Include a notes page in the interview, where interviewers can jot down issues arising from the Application Pack or PAC for further investigation in the interview.

Summary of recommendations: Interview

It is recommended that:

1. Interviewers are provided with clear instructions on how to conduct the interview and assess applicants' responses, to ensure assessment consistency and accuracy;
2. The interview panel consists of at least three interviewers, in order to increase the thoroughness of the assessment. Of this three, there should be at least one specialist interviewer, whose role is to ensure interview protocol and lead the assessment of applicant responses;
3. Regular assessment audits are conducted to ensure interviewers are making accurate and consistent assessment ratings. Human Resources staff, or similar experts, could conduct these audits; and
4. The interview form includes a notes page, where interviewers can note issues arising from applicants' Application Packs and PAC performance, for further investigation in the interview.

Stage 6. Reference Check

Currently, a reference check is conducted for applicants who are deemed suitable for employment from the interview. Reference checks are common across Fire Services, and are generally conducted subsequent to the interview. The reference check used by the NZFS is a one-page form designed to investigate characteristics such as teamwork, communication, punctuality, and honesty and integrity. At present, administrative staff from the applicant's region conduct the reference checks.

Strengths of the current NZFS reference check are that it:

- Describes the key characteristics of the firefighter role to referees, and includes a range of questions targeting important skills (e.g. teamwork, communication, punctuality, honesty and integrity); and
- Is brief and can be conducted within 20 minutes.

A review of best-practice psychological assessment research has identified some potential areas for improvement. Firstly, there is no space on the reference check form for reference checkers to follow up any issues raised in the interview. Secondly, untrained regional administrative staff are assigned responsibility for reference checking. For these reasons, a few changes were made to the reference check, which are outlined below.

Observations and recommended improvements

The recommended improvements to the reference check concern the following up in the reference check of information provided in the interview and performance at the PAC, and assigning responsibility for conducting reference checks to trained staff involved in the assessment of firefighter applicants. Further descriptions of these recommended changes, and the rationale for implementing them, are included in Table 11.

Table 11

Observations and Recommended Improvements to the Reference Check

Observations: Reference Check	Recommended Improvements
Include queries from the PAC and Interview	
<ul style="list-style-type: none"> ■ Currently, the reference check form does not encourage reference checkers to investigate any queries raised in either the PAC or interview. Doing so would help reference checkers clarify any issues or concerns. 	<ul style="list-style-type: none"> ■ Include space on the reference check form for reference checkers to note down any queries raised in the interview and PAC that should be followed up in the reference check.
Assign specially trained staff responsibility for conducting reference checks	
<ul style="list-style-type: none"> ■ Administrative staff who have little or no training in the use of reference checks are currently conducting reference checks. Consequently, they may not sufficiently probe information provided by the referees, or clarify the meaning of their responses. 	<ul style="list-style-type: none"> ■ Assign the semi-permanent team of assessors (i.e. those staff that assess the Application Packs, PPT, PAC, and conduct interviews) responsibility for conducting reference checks. This team should be provided with training in the administration of reference checks. Ideally, a person from the applicant's interview panel should contact his/her referees.

Summary of recommendations: Reference check

It is recommended that:

1. A section for notes is included on the reference check form, where reference checkers can note issues arising from applicants' PAC performance and interview, to enable further investigation in the reference check; and
2. Trained interviewers conduct the reference check, rather than administrative staff, so that reference check consistency is maintained and referee information obtained is sufficiently comprehensive and clear.

4.3 Selection process observations and recommended improvements

The review identified a number of changes to the policies and systems that could improve the efficiency and effectiveness of the current selection process. These are outlined below.

Staffing

There are obvious benefits in having operational staff involved in the assessment of firefighter applicants (i.e. job knowledge, etc), but these individuals are not always experienced or trained in assessment techniques. A semi-permanent, unchanging team of assessors could be extensively trained in how to assess applicants throughout the assessment process. Maintaining a core group of experts would ensure that the selection process was consistently administered. These staff would be responsible for correctly training any new staff seconded to the team in the assessment of applicants, and for role-modelling assessment best practice to less experienced staff.

While experienced operational staff should continue to be involved in the assessment of Application Packs, the PPT, the PAC, and the interview, Human Resources staff would need to administer, score, and interpret the cognitive ability tests.

Training

Assessors involved in the selection of firefighters will require relevant and timely training on how to use the assessment materials. Ideally, training would include an explanation of the importance of adhering to assessment best practice, a practice session in assessing, and a peer review of assessment ratings. For the first recruitment round using the new process, assessors could receive training for a particular selection stage immediately prior to them assessing applicants (i.e. assessors would receive training on how to rate the Application Pack within the week prior to them assessing Application Packs).

Storage of information

The NZFS would benefit from keeping an electronic database of the assessment ratings of all firefighter applicants. This database will help inform the NZFS of recruitment trends, and will also provide valuable information for evaluating the selection process and assessor performance. Applicant information could be entered as each stage of the assessment process is completed, or at the end of a recruitment round. Ideally, sufficient assessment information would be stored to prevent the need to retain paper files of applicant information.

Applicant feedback

Unsuccessful applicants wanting to know the reason for their non-selection must be provided with feedback on their performance during the selection process. The feedback needs to be accurate and clear (i.e. their Self-Assessment responses to the Application Pack were too brief, they did not demonstrate their problem solving skills on the PAC, etc). Applicants wanting feedback on their cognitive test results must be told their raw and percentile scores, and given an interpretation of their percentile score (e.g. they scored in the above average range when compared to other firefighter applicants. This means that they have an above average ability to solve new and complex problems).

Evaluation

Any new selection process that is implemented within the NZFS needs to be regularly evaluated to ensure it is selecting people who would be successful firefighters, and not selecting those people who would be unable to perform on-the-job. There are two main ways in which the selection process can be evaluated.

Firstly, it is recommended that assessment audits are conducted at each recruitment round, to ensure that assessors are accurately rating applicants. A sample of assessment materials (e.g. 5% of the total assessment materials) could be reviewed at each recruitment round, to check for consistency and accuracy. It would be useful to include on the electronic database, the names of assessors and the ratings they have assigned for applicants and workstations. This will highlight any rating preferences (i.e. too harsh or too lenient for applicants or particular workstations) and assessors could be provided with feedback on how to improve his/her assessment ratings.

Secondly, it is recommended that the on-the-job performance of applicants who have participated in the new selection process be evaluated after one year of employment. Surveys (similar to those used to validate the firefighter selection competencies) could be sent to the managers of these firefighters, to assess their overall performance and performance on the five firefighter selection competencies. Statistical analyses could be performed on this data to determine the strength of the relationship between selection ratings and on-the-job performance ratings.

Summary of recommendations: Selection process

It is recommended that:

1. The NZFS assigns responsibility for the assessment of firefighter applicants to a semi-permanent, unchanging team of assessors, to ensure the consistent administration of the selection process;

2. The assessment team receive relevant and timely training on how to use the assessment materials, to ensure they are assessing applicants correctly and consistently;
3. The NZFS keep an electronic database of the assessment ratings of all firefighter applicants, to inform the NZFS about recruitment trends and provide information for evaluating the selection process and assessor performance;
4. The NZFS provide clear and accurate feedback to all applicants who request it, so that applicants can best prepare themselves for subsequent applications; and
5. The revised selection process is evaluated by: 1) conducting regular assessment audits to ensure assessors are accurately rating applicants; and 2) investigating the relationship between assessment ratings and survey ratings of on-the-job performance after one year of employment, to ensure the selection process is selecting the right people to be firefighters.

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Appendix A – Current firefighter selection criteria, and how they are assessed

Being a Team Player
<p><i>Application Form</i></p> <ul style="list-style-type: none"> ■ Working with others ■ Being inclusive ■ Able to participate <p><i>Practical Assessment Course</i></p> <ul style="list-style-type: none"> ■ Committed to working in a team <p><i>Interview</i></p> <ul style="list-style-type: none"> ■ Demonstrates an ability to work in a team environment ■ Willingly works with others, accepting fair share of tasks ■ Acknowledges the contributions of others ■ Shows consideration for colleagues ■ Encourages people to work together ■ Consults and shares information with others ■ Makes others feel valued ■ Promotes harmony and a team spirit ■ Is non-judgmental ■ Balances personal objectives with those of the team, but is willing to confront others when necessary ■ Allows decisions to be made by consensus
Ability to Learn and Retain Knowledge
<p><i>Application Form</i></p> <ul style="list-style-type: none"> ■ A willingness to learn new things ■ Able to demonstrate potential ■ Open minded ■ Able to retain learning ■ Able to demonstrate new learning <p><i>Interview</i></p> <ul style="list-style-type: none"> ■ Has a range of educational qualifications (judge from resumé) ■ Shows ability to take part in new things or challenges (work or non work related), and is able to maintain commitment. ■ Has attended personal development courses

Ability to Learn and Retain Knowledge, continued
<ul style="list-style-type: none"> ■ Seeks experiences in life that would improve/widen personal focus e.g. Lions, Toastmasters etc ■ Is self-driven ■ Balances personal and professional life ■ Aware of their own strengths and weaknesses and is aware of how their behaviour is perceived by others ■ Seeks feedback from others to identify ways to improve own performance ■ Responds to constructive criticism positively through appropriate action ■ Shows a desire to learn from mistakes ■ Has achieved promotion and taken steps to improve status in the workplace ■ Is self starting, proactive and self motivated.
Physically Competent
<p><i>Application Form</i></p> <ul style="list-style-type: none"> ■ Good aerobic level (endurance) ■ Good anaerobic level (strength) ■ General dexterity skills ■ Good physical coordination <p><i>Practical Assessment Course</i></p> <ul style="list-style-type: none"> ■ Displays complete ability/aptitude in practical dexterity <p><i>Interview</i></p> <ul style="list-style-type: none"> ■ Has a regular personal fitness programme and/or sporting activities ■ Has good endurance and strength or is working towards achieving a good level of endurance and strength ■ Described one of their skills or hobbies, which involve good dexterity and hand co-ordination
Interpersonal Skills
<p><i>Application Form</i></p> <ul style="list-style-type: none"> ■ Good communicator ■ Able to relate to different people ■ Good listener ■ Articulates clearly to all levels <p><i>Practical Assessment Course</i></p> <ul style="list-style-type: none"> ■ Displays excellent interpersonal skills ■ Displays complete confidence and ability to resolves a conflict situation ■ Displays complete ability to verbally communicate effectively

Interpersonal Skills, continued

Interview

- Panel to judge by interaction with panel throughout interview e.g. clear spoken, proper grammar used, pitches language correctly (e.g. no swearing, avoids jargon etc), appropriate body language, not slouching in chair, eye contact, no fiddling
- Articulates ideas or responses well
- Demonstrates the ability to overcome barriers
- Identifies potential barriers
- Demonstrates ability to use a range of communication styles/techniques and tools

Attitude and Personality

Application Form

- Self discipline
- Desire to achieve
- Motivated
- Community involvement

Practical Assessment Course

- Displays outstanding ability to use initiative, good attitude
- Displays outstanding enthusiasm, friendly personality
- Displays complete professionalism, culturally aware
- Displays outstanding enthusiasm and pride, good attitude, looked for work

Interview

- Demonstrated a desire to achieve e.g at school, work or in sports etc
- Sets personal goals and standards
- Consults with others and if required, seeks assistance
- Takes responsibility for own actions rather than blaming others
- Demonstrates concern for effectiveness (doing the right things) and efficiency (doing things the right way)
- Balances personal and professional life
- Positive attitude towards cultures different than own
- Demonstrates an awareness of and sensitivity towards other cultures
- Realistic about working in a structured organisation
- Shows an interest in community involvement
- Devotes personal time to community goals

Appendix B – Comparison of firefighter selection competencies worldwide

Please note that only the NZFS's broad competency groupings (e.g. Being a Team Player, Learning and Retention, Physically Competent, Interpersonal Skills, and Attitude and Personality) have been included in the following comparison. While the NZFS competency criteria could be represented in the table, every effort has been made to represent only competencies, rather than competency criteria, for international Fire Services. However, in some cases Fire Services failed to distinguish between competencies and competency criteria, and all skills have been included.

	NZFS	Queensland FRA	Tasmania FS	NSW FBs	Northern Territory FRS	South Wales FB	Cornwall County FB	Hampshire FRS	Humberside FB	South Yorkshire FB
Being a Team Player	X		X	X	X	X	X	X	X	X
Interpersonal Skills	X					X	X		X	
Communication Skills		X	X	X	X	X	X	X	X	X
Ability to be Sympathetic and Caring				X						
Ability to Learn and Retain Knowledge and Skills	X		X	X						X
Abilities (verbal, numerical, practical intelligence)		X						X		X
Decision-Making, Judgement, Problem Solving Skills			X		X	X	X		X	X
Awareness of Firefighter Role and Fire Service						X	X	X	X	X
Mechanically Able								X		
Practical Skills			X			X	X		X	X
Physically competent	X	X			X	X	X	X	X	X
Safety Knowledge/Orientation			X					X	X	
Attitude and Personality	X									
Social Maturity		X								
Acceptance of Feedback				X						
Integrity				X	X					
Professionalism					X					
Respect for Others				X						
Commitment to Equality/Fairness at Work						X	X	X	X	
Calmness under pressure										X
Self-Discipline		X		X				X	X	X
Commitment				X				X		
Following Order or Instructions				X		X	X		X	
Performing Station Duties with Others or Independently					X					

Appendix C – Firefighter selection research survey



New Zealand Fire Service Firefighter Selection Research Survey

Name of firefighter being rated

Confidentiality

Your responses will be confidential to Cerno Limited (the company conducting the research project). No Fire Service staff member will see your ratings or comments. No information you provide will be shown to the firefighter concerned, or be kept on his/her personal file. The information collected in this survey will be destroyed at the conclusion of the study.

Instructions

Cerno Limited is a consulting company undertaking Contestable Research Fund work with the New Zealand Fire Service. We are looking at whether improvements can be made to the process used to assess and select firefighters. To identify where improvements can be made, we need to gain information on how well the current selection competencies and process are working. You have been chosen to complete this survey because you are in a position to comment on the performance of a recently employed firefighter.

The information from this survey will be one of the information sources used to determine the skills that should be assessed in potential firefighters, and the selection process that can best assess these skills.

This survey should take you approximately 20 minutes to complete.

How to complete the survey

For each statement, think about how well the firefighter currently performs in the area described by the statement. Place a circle around the appropriate number as follows:

1. Poor

Circle this number if you think this is an area in which the firefighter performs poorly.

2. Fair

Circle this number if you think this is an area in which the firefighter performs fairly.

3. Good

Circle this number if you think this is an area in which the firefighter performs well.

4. Very Good

Circle this number if you think this is an area in which the firefighter performs very well.

5. Excellent

Circle this number if you think this is an area in which the firefighter performs excellently.

Returning the survey

Once you have completed the survey, please post it in the enclosed envelope to be received by not later than **Friday 27th June**.

Background Information

	Never	Rarely	Sometimes	Often	Very Often
How often do you observe this firefighter on-the-job?	1	2	3	4	5

Performance Ratings

	Poor	Fair	Good	Very Good	Excellent
In your experience, how would you rate this firefighter's ability to:					
1	1	2	3	4	5
2	1	2	3	4	5
3	1	2	3	4	5
4	1	2	3	4	5
5	1	2	3	4	5
6	1	2	3	4	5
7	1	2	3	4	5
8	1	2	3	4	5
9	1	2	3	4	5
10	1	2	3	4	5
11	1	2	3	4	5
12	1	2	3	4	5
13	1	2	3	4	5
14	1	2	3	4	5
15	1	2	3	4	5
16	1	2	3	4	5

In your experience, how would you rate this firefighter's ability to:		Poor	Fair	Good	Very Good	Excellent
17	Display a high level of integrity and honesty in their day-to-day work.	1	2	3	4	5
18	Display a high level of motivation to be a firefighter.	1	2	3	4	5
19	Display a willingness to 'go the extra mile' for people.	1	2	3	4	5
20	Display an improvement focus (i.e. always looking at ways to do things more effectively/efficiently).	1	2	3	4	5
21	Display initiative and drive.	1	2	3	4	5
22	Display manual dexterity (i.e. be good with their hands).	1	2	3	4	5
23	Display mechanical knowledge (e.g. an understanding of how things work, leverage, structural relationships, water pressure, valves, electricity, etc).	1	2	3	4	5
24	Display respect for authority (e.g. responding to orders, etc).	1	2	3	4	5
25	Display self-confidence.	1	2	3	4	5
26	Display spatial ability (e.g. able to read maps, can accurately picture a building's layout from plans, etc).	1	2	3	4	5
27	Do a number of things at the same time (i.e. multitask).	1	2	3	4	5
28	Expect high standards of self and others.	1	2	3	4	5
29	Get on well with a wide range of people.	1	2	3	4	5
30	Give people positive and constructive feedback about their performance.	1	2	3	4	5
31	Have the necessary level of fitness to perform the firefighter role	1	2	3	4	5
32	Know own strengths and development areas.	1	2	3	4	5
33	Know when to seek others' advice/expertise (i.e. when out of their depth).	1	2	3	4	5
34	Learn from their mistakes.	1	2	3	4	5
35	Listen to others' ideas.	1	2	3	4	5
36	Maintain their physical fitness.	1	2	3	4	5
37	Manage anxiety and fear in frightening situations.	1	2	3	4	5
38	Open to feedback on ways to improve their performance.	1	2	3	4	5
39	Put the needs of the team before their own needs.	1	2	3	4	5
40	Remain calm and level-headed in pressured situations.	1	2	3	4	5
41	Seize opportunities to improve their performance.	1	2	3	4	5
42	Show consideration for their colleagues.	1	2	3	4	5
43	Show loyalty to their organisation.	1	2	3	4	5
44	Take action to organise people/things when people are not sure what to do.	1	2	3	4	5

In your experience, how would you rate this firefighter's ability to:		Poor	Fair	Good	Very Good	Excellent
45	Take responsibility for own actions.	1	2	3	4	5
46	Take steps to address own development areas.	1	2	3	4	5
47	Think and act quickly 'on their feet' in pressured situations.	1	2	3	4	5
48	Value contributions others can make to a situation.	1	2	3	4	5
49	Work at heights.	1	2	3	4	5
50	Work hard to understand the perspectives of people from other cultures.	1	2	3	4	5
51	Work in confined spaces.	1	2	3	4	5
52	Work well with people from different backgrounds/cultures, etc.	1	2	3	4	5
53	Work willingly with others to get things done (e.g. persuade and influence, build relationships, communicate well, and have good interpersonal understanding).	1	2	3	4	5
54	Work independently when required (i.e. without assistance from others).	1	2	3	4	5

Overall rating of performance

Overall rating of performance		Poor	Fair	Good	Very Good	Excellent
	How would you rate this firefighter's overall performance, compared to other firefighters?	1	2	3	4	5

Possible Improvements to the Current Firefighter Selection Process

We are interested to know how you think the firefighter selection process could be improved. Please provide your thoughts to the following questions.

What other skills (in addition to those you have rated in this survey) should be assessed when selecting firefighters?

Some skills are particularly important when assessing people to be firefighters, while others are less important. Which skill do you think are the most important areas to assess?

What improvements, if any, could be made to the current firefighter selection process (e.g. the application form, the written and numerical skills test, the physical test, the Practical Assessment Course, and the panel interview)? What do you think could make the selection process work better?

Thank you for taking the time to complete this survey.

Please place your completed survey in the enclosed envelope and post it to arrive no later than **Friday 27th June.**

Appendix D: Analysis of survey comments

The following three open-ended questions were included at the end of the survey that was sent to senior Fire Officers. The responses were combined for each question, and analysed to identify common themes. Only those responses that were mentioned by at least two survey respondents are reported here. The responses have been compared with the current NZFS firefighter selection criteria, to determine the additional skills that the NZFS could be assessing.

Question One: What other skills (in addition to those you have rated in this survey) should be assessed when selecting firefighters?

Skill	Number of Responses	Listed as Selection Criteria?
Previous Experience/Demographic Suitability		
Previous experience as a firefighter or tradesperson	7	Y
HT licence/ability to drive	6	Y
General life skills/experience	6	N
Young	3	N
Drive, Energy, and Achievement Focus		
Work ethic	3	Y
Motivated	2	Y
Self-disciplined	2	Y
Conscientious	2	N
People and Team Work Skills		
Respect for superiors/authority (take instruction)	7	N
Able to be a team player/work in a group	4	Y
Knowledge of other cultures	2	Y
Interpersonal skills	2	Y
Applied Problem Solving Skills		
Calm under pressure	8	N
Manual dexterity	4	Y
Basic understanding of law/legislation	2	N
Problem-solving skills	2	N

Skill	Number of Responses	Listed as Selection Criteria?
Communication Skills		
Computer skills	3	Y
Written communication skills	2	Y
Other		
Humility/Modesty	4	N
Maturity	3	N
Pride in one's appearance (good personal grooming)	2	N

Question Two: Some skills are particularly important when assessing firefighters, while others are less important. Which skills do you think are the most important areas to assess?

Skill	Number of Responses	Listed as Selection Criteria?
Previous Experience		
General knowledge/common sense	11	N
Previous experience as a firefighter or tradesperson	6	Y
HT licence/able to drive	3	Y
General life skills/experience	2	N
Drive, Energy, and Achievement Focus		
Able and willing to learn	13	Y
Honest	7	N
Initiative	6	Y
Integrity	5	N
Motivated	5	Y
Keen to improve self	3	Y
Interested in being community involved	2	Y
Work ethic	2	Y
Conscientious	2	N
Reliable	2	N
Leadership potential	2	N

Skill	Number of Responses	Listed as Selection Criteria?
Able to work unsupervised	2	N
Patient	2	N
People and Team Work Skills		
Able to be a team player/work in a group	51	Y
Respect for superiors/authority (take instruction)	21	N
Interpersonal skills	8	Y
Able to communicate with a variety of different people	7	Y
Empathetic	3	Y
Listening skills	3	Y
Positive attitude/cheerful disposition	3	N
Relationship Skills	2	Y
Applied Problem Solving Skills		
Practical/Hands on skills	26	Y
Calm under pressure	20	N
Manual dexterity	11	Y
Knowledge of tools/mechanics	6	N
Problem-solving skills	6	N
Creative/lateral thinker	5	N
Well coordinated	4	Y
Able to work in confined spaces	3	Y
Able to work at heights	2	Y
Able to interpret information	2	N
Intelligent	2	N
Communication Skills		
Written communication skills	7	Y
Computer skills	5	Y
Verbal communication skills	5	Y
Physical Fitness		
Physical fitness	21	Y
Strength	6	Y

Skill	Number of Responses	Listed as Selection Criteria?
Physical endurance	3	Y
Other		
Flexible and adaptable to change	10	N

Question Three: What improvements, if any, could be made to the current firefighter selection process (e.g. the application form, the written and numerical skills test, the physical test, the Practical Assessment Course, and the panel interview)? What do you think could make the selection process work better?

Improvement	Number of Responses
Have one test for all applicants (i.e. don't lower the standards for women/minorities)	38
Favour young people (e.g. 20-30) when making selection decisions	7
Have Fire Officers sitting in on the selection process	5
Choose more carefully the people assessing applicants for selection	5
Provide applicants with a more realistic preview of the job	3
Allow all applicants to complete all selection tests (i.e. don't short-list applicants that have only completed one selection test)	3
Simplify the current application form	3
Place less emphasis on selecting applicants for their leadership skills	2
Provide a probationary period for new recruits	2
Request having an HT licence as a minimum entry requirement	2
Consider favourably applicants who have had previous volunteer firefighter experience	2
Put in place a process whereby returnees to the service do not have to complete the entire selection test again	2
Conduct selection testing in a greater number of locations	2
Conduct referee checks (i.e. applicants' pasts should be more carefully examined)	2

Appendix E – Revised competency model

Factor 1: Drive, Energy, and Achievement Focus

Keen to learn/develop/enhance skills

- Know own strengths and development areas.
- Be motivated to keep learning and developing new skills.
- Seize opportunities to improve their performance.

Drive/energy

- Display energy, initiative, and drive.
- Display a willingness to 'go the extra mile' for people.
- Work independently when required (i.e. without assistance from others).
- Display a high level of motivation to be a fire-fighter.

Achievement Focus

- Expect high standards of self and others.
- Display an improvement focus (i.e. always looking at ways to do things more effectively/efficiently).

Factor 2: People and Team Work Skills

Relates well to a wide range of people

- Be genuinely empathetic; can put themselves in others' shoes.
- Work well with people from different backgrounds/cultures, etc.
- Get on well with a wide range of people.

Team skills

- Work willingly with others to get things done (e.g. persuade and influence, build relationships, communicate well, and have good interpersonal understanding).
- Be a team player (consider colleagues, share information and ideas, help other team members, accept fair share of tasks, put needs of team before own needs, etc).
- Demonstrate tolerance and patience in frustrating situations.
- Value contributions others can make to a situation.
- Display respect for authority.

Open to others' views

- Listen to others' ideas.
- Open to feedback on ways to improve their performance.
- Know when to seek others' advice/expertise (i.e. when out of their depth).

Factor 3: Applied Problem Solving Skills

Applied skills and knowledge

- Display manual dexterity (i.e. be good with their hands).
- Display spatial ability (e.g. able to read maps, can accurately picture a building's layout from plans, etc).
- Display mechanical knowledge (e.g. an understanding of how things work, leverage, structural relationships, water pressure, valves, electricity, etc).
- Do a number of things at the same time (i.e. multitask).

Solving problems and making decisions in pressured situations

- Display self-confidence.
- Remain calm and level-headed in pressured situations (e.g. can think and act quickly).
- Manage anxiety and fear in frightening situations.
- Work in confined spaces.
- Demonstrate good problem-solving skills (e.g. identify risks and opportunities, look at a range of options, break problems into smaller parts to help solve, choose the most effective solution, etc).

Factor 4: Communication Skills

- Be confident and comfortable using a computer.
- Communicate effectively in writing (e.g. use correct grammar, vocabulary, spelling and punctuation).
- Communicate clearly, confidently, and concisely.

Factor 5: Physical Fitness

- Maintain their physical fitness.
- Have the necessary level of fitness to perform the fire-fighter role.

Appendix F: How the recommended firefighter selection criteria could be assessed

Drive, Energy, and Achievement Focus
<p>Application Pack</p> <p>Be motivated to keep learning and developing new skills.</p> <p>Seize opportunities to improve their performance.</p> <p>Display a willingness to ‘go the extra mile’ for people.</p> <p>Display energy, initiative, and drive.</p> <p>Work independently when required</p> <p>Display a high level of motivation to be a firefighter.</p> <p>Interview</p> <p>Display a high level of motivation to be a firefighter.</p> <p>Expect high standards of self and others.</p>
People and Team Work Skills
<p>Application Pack</p> <p>Work well with people from different backgrounds/cultures, etc.</p> <p>Get on well with a wide range of people.</p> <p>Be a team player.</p> <p>Practical Assessment Course</p> <p>Be genuinely empathetic; can put themselves in others’ shoes.</p> <p>Work well with people from different backgrounds/cultures, etc.</p> <p>Get on well with a wide range of people.</p> <p>Work willingly with others to get things done.</p> <p>Be a team player.</p> <p>Put the needs of the team before their own needs.</p> <p>Demonstrate tolerance and patience in frustrating situations.</p> <p>Value contributions others can make to a situation.</p> <p>Display respect for authority.</p> <p>Listen to others’ ideas.</p> <p>Open to feedback on ways to improve their performance.</p>

People and Team Work Skills, continued
<p>Interview</p> <p>Be genuinely empathetic; can put themselves in others' shoes.</p> <p>Work well with people from different backgrounds/cultures, etc.</p> <p>Demonstrate tolerance and patience in frustrating situations.</p> <p>Open to feedback on ways to improve their performance.</p> <p>Know when to seek others' advice/expertise.</p>
Applied Problem Solving Skills
<p>Application Pack</p> <p>Demonstrate good problem-solving skills.</p> <p>Cognitive Ability Tests</p> <p>Demonstrate good problem-solving skills.</p> <p>Display spatial ability.</p> <p>Practical Assessment Course</p> <p>Display manual dexterity.</p> <p>Display mechanical knowledge.</p> <p>Do a number of things at the same time.</p> <p>Display self-confidence.</p> <p>Remain calm and level-headed in pressured situations.</p> <p>Manage anxiety and fear in frightening situations.</p> <p>Work in confined spaces.</p> <p>Interview</p> <p>Demonstrate good problem-solving skills.</p> <p>Display self-confidence.</p> <p>Remain calm and level-headed in pressured situations.</p> <p>Manage anxiety and fear in frightening situations.</p> <p>Demonstrate good problem-solving skills.</p>
Physical Fitness
<p>Application Pack</p> <p>Maintain their physical fitness.</p> <p>Physical Pre-Entry Test</p> <p>Have the necessary level of fitness to perform the firefighter role.</p>

Communication Skills

Application Pack

Communicate effectively in writing (observed).

Communicate clearly, confidently, and concisely (observed).

Practical Assessment Course

Be confident and comfortable using a computer.

Communicate effectively in writing.

Communicate clearly, confidently, and concisely.

Interview

Be confident and comfortable using a computer.

Communicate clearly, confidently, and concisely.

