Report on the Marking Schedule of the 2013 Field Work Test at the Kyoto Olympiad

1. Introduction

The marking schedule describes how the marks were allocated with reference to the Assessment Guidelines. In one case there were adjustments to the marking schedule originally proposed when the student responses were considered. The marking panel were involved and consulted. When the changes were agreed, the marking schedule was reprinted and used in the assessment of all students.

2. Task specification

The first set of tasks required field observation and cartography, the second used geographical analysis to develop a strategic plan for Fushimi. The cartography required first the drawing of a cross profile of a flood-prone part of Fushimi, and second, a land-use map of a part of the community that showed a strong link to water (saké production, recreation etc.). The cartography was completed after a field traverse that featured Site A, the Uji River and local canals.

In the field, the observation and cartography required students to:

1. Observe the characteristics of Site B, with particular attention to the physical geography of the area. Use the template provided to make an annotated cross-sectional diagram between the points labelled 'X' and 'Y' on the map. Describe the nature of the physical geography and the land use on the cross section (30 minutes, 7 marks).

2. Make an annotated land use map of Site C using the base map provided. Refer to the association between land use and water resources/management in your annotations (120 minutes, 13 marks). Write down your observations of the area on the tally sheet, along with your comments on land use and its association with water. Make a land use map in the following way:

- Using property boundaries, show land use based on classification codes you have been given. You should use coloured pencils to represent a number of different land uses.
- Provide a descriptive key, including land use classification and reference to the physical and human dimensions of water in the environment. The physical and human dimensions of water should be symbolised on your map as an overlay on the land use classification. Include descriptions of your symbols in the key.

On the following day, the second set of tasks required the LoC/Task Force to provide quite a lot of contextual background. The geographical analysis operated at two levels, the catchment and the community.

The tasks required the students to work in the following manner:

3. With reference to the fieldwork Site B, planners aim to come up with new strategies that will minimize the risk of flood damage in the larger river catchment shown in the maps provided.
i. In terms of (a) infrastructural development (hard) and (b) socio-communal activities (soft), list six strategies (three infrastructural and three socio-communal) that can be applied in the catchment. Specify the locations where they apply.

ii. Then, write expanded notes on each of the strategies you propose, using text (and possibly graphics) to explain the effects of your strategies on flood hazard management in the catchment.

4. Fushimi's historical development is based on water and the importance of its site near Kyoto. The history is reflected in historical landscape preservation, with visitors to a local temple, sake brewing sites, and canal-based activities. Planners now need to develop a strategic plan that provides a sustainable future for the community. Strategic plans often refer to residential environments, retail and commercial provision, manufacturing and industry, transport infrastructure, education and social services, recreation/cultural activities and reserves and open spaces.

i. Write a one sentence 'vision statement' for a sustainable Fushimi in 2035. Outline at least four strategies that link directly to this vision statement. The importance of water and the opportunities provided by tourism should not be ignored.
ii. Using the map template provided, make an annotated map that shows the generalised spatial extent of the various activities you propose for the Fushimi area. Provide a suitable map legend.

3. Marking schedules for the four tasks specified.

Task 1. Marking Schedule

a) The scales in metres are clearly included on both lateral and vertical axes of the cross section (0 or 1 mark).
b) Based on contours and elevation spot heights at nearby locations, the profile is accurately drawn on the cross-section (0 or 1 mark). Stop banks and the canal must be shown; the stop banks from about 60m from left (west) and the canal at about 240m (0 or 1 mark).
c) Descriptions on the profile must include important physical and cultural features, such as drainage features or different types of housing (0, 1, 2, 3 or 4 marks).
Range of typical physical answers
    1. Well-vegetated 5m stop bank to contain Kamo River flow.
    2. Low flow (1.5 m) river level (Kamo) flowing to the south.
    3. River channelling provides for a flood stage to 7m.
    4. More than 70m of profile in area of built environment has impervious surface.
    5. Supporting evidence (Map Resource 1) for alluvial depositional flood plain.
    6. Tree-lined canal banks on both sides of 10m excavated channel.
    7. Other acceptable evidence.

    Less than 3 acceptable comments scores 0, three comments scores 1, and five score 2.

    1. Range of typical human answers
    2. Paved minor roadway 6 m below and to the west of stop bank.
    3. Main road (Route 124) along top of stopbank.
    4. Residential area containing 2/3 storey houses in reasonably good condition
    5. Small lot sizes lead to reasonably high local population density; probably single family dwellings.
    6. Redeveloped canal bank creates enhanced urban environment for local people.
    7. Parking lot in dis-used local warehouse.
    8. Mixed residential area with some apartments.
    9. Other acceptable evidence.

    Less than 3 acceptable comments scores 0, three comments scores 1, and five score 2.

Task 2. Marking schedule

a) Observations are systematically recorded on the submitted tally sheet (2 marks)
b) On the map at least four distinct land use classes are visually distinguishable. (4 marks)
c) On the map water-related issues relating to both physical and human geography are symbolised by shading or hashing. Runoff direction, drainage and ponding may be symbolised. Human uses may include water transportation, brewing, public stand-pipes, wells, etc. (3)
d) In the descriptive key, (i) the separability of land use classes is clear and (ii) the symbology and description of the water-related issues shown. (2 marks for each of d(i) and d(ii)).

(a) **Tally sheet.** Check the list of *human/physical geography* and the *minor classification.* Typical answers will be *Human Geography – Residential* or *Physical Geography – drainage.* There should be landuse key symbols that are shaded. For example, residential areas may be coloured in various yellows. Additional comments are largely for student use. If there are fewer than three complete entries, score 0. Between 3 and 6 entries score 1. If there are more than six, then 2.

(b) There are more than 120 polygons on the map. The ability to generalise is an assessable part of the exercise, so areas with largely similar character (residential yellows) should be visually distinct. Commercial premises should be a generalised type of land-use – browns perhaps. Cultural institutions like temples could be coloured red, perhaps). Industrial buildings and tourism related facilities like museums should all be colour coded and discrete classes on the map. The fire station is a service. Score one mark for each of up to four land uses accurately located on the map.

(c) Mark placement of water symbols on the map. Sake is a water-related activity, so a sake brewery might be shown by a drinking glass shape. A public water facility using ground water can be symbolised by a tap. The tourist use of the canal might be symbolised by a small boat. Allow one mark for each type of symbol accurately placed on the map. Up to three types of symbols can each score a mark if correctly placed on the map.

(d) Looking at the key, first of all for land use classes. Is the descriptive text clear and useful? If there is good text for more than four classes score 2 marks. If there is good text for two to four classes, score one mark. If there is good text for less than two classes, score 0.

Look at the text in the key that symbolises water features. If there is good text for more than four symbols score 2 marks. If there is good text for two to four symbols, score one mark. If there is good text for less than two symbols, score 0.

Task 3. Marking schedule

a) 'Strategies' of local development. Three strategies in each of infrastructural development and socio-communal activity should be listed and located in the catchment.
b) Each strategy should be described briefly and the expected effects of the strategy should be explained.

The use of the word 'locate' requires that most strategies will have an implicit/explicit spatial reference. The marking panel will need to judge (based on review of student texts; what sorts of responses meet the criteria of the word 'locate'). You may use both the strategy and the description to assess this matter.

Part (a) of the task. The list of possible infrastructural strategies is long, and the job of the marking panel is to construct their own list and determine which answers provide a good response to the question. The following list outlines some obvious options:

1. Plant trees along local residential area of levy

2. Manage forest removal in the upper catchment
3. Install/maintain drainage pumps in Fushimi and test performance regularly
4. Provide boats at key locations in Fushimi for potential evacuation
5. Manage upper catchment to retain water away from areas of ponding in lower catchment
6. Develop ponding areas in Fushimi and throughout catchment, especially for environmental enrichment
7. Manage river flow through catchment –armouring, weirs, riffles, stopbank construction
8. Protect strategic buildings in Fushimi through local stop banks
9. Other reasonable strategy

In terms of <u>social strategies</u>

1. Establishment of a neighbourhood/local residents' association and provide flood information
2. Make and conduct training sessions in the community
3. Make individual/family evacuation plans and arrange a practice session
4. Make community evacuation plan and arrange a practice session
5. Management and maintenance of public supplies for emergency services
6. Work to integrate emergency services (police, fire fighting, army) involved in disaster management
7. Other reasonable strategy

Marking. There are only two marks available here; this is a formative rather than substantive process. A non response scores 0, three or more acceptable responses (as long as there are physical and social entries) will score 1, and a significant number of students will be expected to score 2 (full marks).

<u>Part (b) of the task.</u> The important phrase in the explanations is <u>impact.</u> If students have not identified the impact of any strategy, even if they have described the strategy very well, they can not score more than half marks. The panel leader will train and get agreement among markers by using examples of student texts. The list below outlines the type of description and impact assessment that students might provide; these answers would each score 1 mark.

1. Establishment of neighbourhood/local residents' association in Fushimi and the provision of flood information will have the impact of increasing the awareness of flood risk in the community.
2. Managing forest removal in the upper catchment will have the impact of holding water in the upper catchment longer to 'flatten' the hydrological flood stage after a severe rainfall event.
3. Protecting strategic buildings, like electricity distribution centres in Fushimi, through local stop banks will have the impact of securing vital services through the duration of an extreme natural event and will speed the recovery after the event.

Task 4. Marking schedule

The intent of each of the four strategies should be clear, and they should be linked to the vision statement. Each of the four strategies should be qualified. The qualification on each strategy can be through reference to the physical and cultural geography of Fushimi or identifying the positive (or negative) impacts of these strategies on the community. The map provided should identify the areas in which each strategy will be implemented and should include appropriate annotation.

<u>Marking part (a).</u> Have a look at the vision statement first. An example might be:

Fushimi: A Place Where History and Water Harmonize

Then look for a 'sectoral' identifier in each strategy. Examples might include tourism, population-based, housing, retailing, sake or other industrial development, a focus on water heritage, transport and/or urban community. Sector references like this are included in the question. It is possible to have two strategies with one sector reference. For example, there could be a population-based strategy to cater for the housing of an ageing population, and second strategy that focused on the provision of schools and recreation facilities for young people. Strategies should be linkable to the vision statement; the (community) vision allows us to link the strategies to the place (Fushimi) they have actually seen. There is no requirement that water and tourism will be addressed. This statement, like the vision statement, was intended as 'scaffolding' for students. Score 1 mark for each strategy that can be linked to the vision statement; the intent is that strategies will fail to score only if they are inappropriate or not clearly expressed (e.g. 'To encourage local people to have fun'). Examples might include;

> Preservation and use of waterways. The waterways of Fushimi, pedestrian paths, and green spaces should be preserved and used appropriately, and the use of these areas by local people should be encouraged.
>
> Effective use of historic buildings. Historic buildings in the designated area should be preserved and used appropriately. For example, the saké brewing company buildings, the Okura Memorial Museum, Chokenji Temple and Gekkeikan should be part of a protected heritage selection that could form the basis of a tourism venture.

To score 2, the strategy needs to be 'qualified' in some way. An impact assessment on the physical and cultural geography of Fushimi is the easiest way to achieve this, but other forms of qualification can be accepted. An example could be "using a protection order on historic building has the dual impact reminding local people of their past, and providing a focus for a tourism initiative before 2035". After looking at some papers, and with discussion and agreement with the panel leader, up to 2 marks can be awarded for each strategy.

Marking part (b). The map should have locations shown for strategies. The shape of the areas affected by the strategy can be shown; for example, if there is a strategy to enhance and protect the local commercial centre from large mall competition, the shape of the existing retail centre can be highlighted with a reference number and keyed detail. The protection of historic sites (see 1:25,000 map) can be symbolised and located on the map with key detail. If the location of all four strategies in the Fushimi area is shown (annotation and key), four marks can be scored. Partial marks may be scored after an assessment of student scripts, discussion and with approval of the panel leader.

Report on the Assessment Guidelines for the 2013 Field Work Test at the Kyoto Olympiad

1. Introduction

Henk Ankoné and Lex Chalmers first met with the Kyoto Olympiad Local Organising Committee more than a year before the event on 31 July-4 August 2013. The LoC was chaired by Yoshiyasu Ida, with significant input from Hiromi Iwamoto, Katsuki Toida and Hiroya Yoshimizu. The LoC and Task Force representatives met face-to-face three times in all, and had extensive email correspondence. Language was a modest barrier, with 'dialogue' facilitated through Taro Futamura.

There was agreement from the outset that history and contemporary use of water provided an excellent and accessible theme for the FWT. Fushimi was established as the river port for Kyoto, and historically has been the site of good quality ground water on which the local saké industry was based. A local canal system was used to export sake to the rest of Japan. Contemporary water supply through the Lake Biwa Canal, and the distribution/use of water in Kyoto were interesting aspects, along with the significant flood risk in Fushimi and the links between water and cultural practices in Japan. The theme of the FWT for 2013 was delivered to students initially through a 13-page resources booklet entitled *Cities and Water* (see first two pages in Appendix One). Students undertook preparatory work with a visit to the Lake Biwa Canal Museum, and a 90-minute briefing before the first fieldwork task. The briefing included a lecture from Prof. Fujitsuka on catchment history and flood risk in Kyoto.

2. Task specification of the FWT

The formal work was split into two components to meet the formal prescription of the Test.

The first set of tasks required field observation and cartography, the second used geographical analysis to develop a strategic plan for Fushimi. The cartography required first the drawing of a cross profile of a flood-prone part of Fushimi, and second, a land-use map of a part of the community that showed a strong link to water (saké production, recreation etc.). The cartography was completed after a field traverse that featured Site A, the Uji River and local canals.

The first set of tasks (1 and 2; observation and cartography) required students to:

1. Observe the characteristics of Site B, with particular attention to the physical geography of the area. Use the template provided to make an annotated cross-sectional diagram between the points labelled 'X' and 'Y' on the map. Describe the nature of the physical geography and the land use on the cross section (30 minutes, 7 marks).

2. Make an annotated land use map of Site C using the base map provided. Refer to the association between land use and water resources/management in your annotations (120 minutes, 13 marks). Write down your observations of the area on the tally sheet, along with your comments on land use and its association with water. Make a land use map in the following way:

- Using property boundaries, show land use based on classification codes you have been given. You should use coloured pencils to represent a number of different land uses.
- Provide a descriptive key, including land use classification and reference to the physical and human dimensions of water in the environment. The physical and human

dimensions of water should be symbolised on your map as an overlay on the land use classification. Include descriptions of your symbols in the key.

On the following day, the second set of tasks required the LoC/Task Force to provide contextual background. The geographical analysis operated at two levels, catchment and community.

The second set of tasks (3 and 4) required the students to work in the following manner:

3. With reference to the fieldwork Site B, planners aim to come up with new strategies that will minimize the risk of flood damage in the larger river catchment shown in the maps provided.

In terms of (a) infrastructural development (hard) and (b) socio-communal activities (soft), list six strategies (three infrastructural and three socio-communal) that can be applied in the catchment. Specify the locations where they apply.
ii. Then, write expanded notes on each of the strategies you propose, using text (and possibly graphics) to explain the effects of your strategies on flood hazard management in the catchment.

4. Fushimi's historical development is based on water and the importance of its site near Kyoto. The history is reflected in historical landscape preservation, with visitors to a local temple, sake brewing sites, and canal-based activities. Planners now need to develop a strategic plan that provides a sustainable future for the community. Strategic plans often refer to residential environments, retail and commercial provision, manufacturing and industry, transport infrastructure, education and social services, recreation/cultural activities and reserves and open spaces.

Write a one sentence 'vision statement' for a sustainable Fushimi in 2035. Outline at least four strategies that link directly to this vision statement. The importance of water and the opportunities provided by tourism should not be ignored.

Using the map template provided, make an annotated map that shows the generalised spatial extent of the various activities you propose for the Fushimi area. Provide a suitable map legend.

3. Assessment guidelines

Task 1.
The Marking Schedule for this task was first discussed at the meeting of the marking panel of five.
Assessment: 7 marks, no half marks awarded.
Model answers were provided.
Sample material from students came with the marking schedule.
The panel leader (Alexy from Russia) was responsible for insuring consistency of marking.

Task 2.
The Marking Schedule for this task was first discussed at the meeting of the marking panel of four.
Assessment: 13 marks, no half marks awarded.
Model answers were provided.
Sample material from students was provided with the marking schedule.
The panel leader (Birgit, Denmark) was responsible for insuring consistency of marking.

Task 3. Assessment guidelines
The Marking Schedule for this task was first discussed at the meeting of the marking panel of six.
Model answers were provided.
Sample material from student answers was provided with the marking schedule.
The panel leader (Robert, Belgium) was responsible for insuring consistency of marking.

Task 4. Assessment guidelines
The Marking Schedule for this task was first discussed at the meeting of the marking panel of six.
Model answers were provided.
Sample material from student answers was provided with the marking schedule.
The panel leader (Anu, Finland) was responsible for insuring consistency of marking.

4. Outcomes and comments

The overall student performance in the FWT was satisfactory with an average mark of 19.4/40 with a standard deviation of 5.73. The figures were comparable to the WRT, where the average was 18.5/40 and the standard deviation was 5.21. (In comparison, the MMT has a mean of 14.9/20, and the narrowest standard deviation of 2.01 – 4.02 if averages are compared).

The mark range was highest in the FWT (from 2 to 32, as compared with 4.2 to 30.7 in the WRT, and 8.5 to 18 in the MMT). In the FWT, the marking schedule required students to provide clear evidence, and there were no half marks available and this probably limited scoring. As a consequence, the field work test was regarded by the LoC and task Force as (i) able to discriminate effectively between students and (ii) a fair test overall.

For specific FWT tasks, the answers of every team member from three, randomly-selected countries was check-marked, with the marking panel leader available to comment on the rationale for the marks awarded. Sampling was also done at the top and bottom of the mark distribution for each task. In addition inter-marker variability was reviewed. The number of reviews and adjustments (generally by one mark, but by two marks on two occasions) was low (five cases in more than 100 of the 500+ individual task answers checked).

Task 1 was quite poorly done. Despite a map with a clear scale and with the location of the cross profile marked, less than half the students marked the axes correctly, and many drew distorted cross profiles. The annotation of the profiles was done a bit more consistently, but the overall average mark was too low to convince the panel that students had sound observation and recording skills. Students had two copies of the cross profile template, one for observational notes, with the second for completion and submission before leaving the school.

Task 2 was carried out a bit more effectively, although very few students saw the advantages of using the tally sheet as a basis for understanding the spatial distribution of different land-use classes. In general, however, the maps summarized the spatial distribution of land-uses quite well, and the keyed descriptions were therefore sound. The marks for the overlaid symbolization of water related features were generally more variable. The average mark was less than 50% in the scripts checked.

Task 3 and 4 were generally much better developed by students, and this may be a function of the better workspace, field experience and resources available. Task 3 responses were often well-illustrated with thumb-nails pictures, and the understanding of catchment level strategies that affect flooding was good. Students wrote substantial texts; in a number of cases there were 1000 words of text and four or five small diagrams. Very few students failed to score well on this task; the average mark would be between 70% and 80% of the available marks.

Task 4 was also well answered, and the marks were higher that the observation and cartography tasks (1 and 2). In general, the choice of vision statement was excellent and the linkage to the strategic statements chosen was good. In some cases students were able to draw on work done in their own geography programs, and to adapt this for Fushimi. Answers were substantial (1000 words plus) and generally well written. There were many water-based and sustainable tourism strategies, but also population based strategies and a number relating to housing. Only a few strategies were judged 'inappropriate' or poorly supported by contemporary evidence. Perhaps the weakest part of the response to the task was the 'location' of the place where community sustainability orientated

strategies could be put in place. The maps were generally well-keyed, but locational specificity was sometimes awry; the resource book and time for observation in the field had an effect on some students. The average mark lay between 60% and 70%.

Appendix One

Cities and Water

Resource Booklet

Introduction

Many Japanese cities have evolved as a consequence of the availability and use of local water. In the pre-modern era, water was used for variety of purposes in urban areas (transportation, drinking and domestic use, for ceremonial purposes and in industry). In the modern era water has also been used for generating electricity. Such is the importance of water that there is a Japanese term *Shinsui*, which literally means 'water intimacy'. National government and public discourses now emphasize that water sustains people's everyday lives. While water is vital for urban living, too much water may cause problems like flooding; humans need to protect themselves from the risk of hazards (at the interface between extreme natural events and human occupancy of space).

Ever since the national capital was formed nearly 1200 years ago, Kyoto has had close connections with local water, most notably the Kamo River. Since the Meiji period in the late 19th century, the City of Kyoto has taken water from Lake Biwa and used it to supplement local ground water in the development of local economies and residential areas. You will have seen the video presentation at the Lake Biwa Canal Museum on the Excursion this afternoon; it explained the background and current use of Biwako Sosui (the water delivery canal from Lake Biwa). Currently, millions of residents and tourists have access to a secure water supply throughout Kyoto.

Fushimi developed as a river transportation gateway to Kyoto more than 400 years ago, and is a community that especially demonstrates a close connection with water. Current urban development and planning of Fushimi actively emphasizes its relationship with water. The Local Organizing Committee chose Fushimi as the site of the Field Work Task, and we welcome students from around the world to Japan and to the FWT in Fushimi in particular.

In the FWT we will explore some historical associations with water, the way water has influenced the local geographies of Fushimi and the important matters that will shape the future of this community. We note in particular that;

1. More than most places in Japan, Fushimi has worked to build a place that utilized water in the development of the local community.

2. Although there are issues in modern Fushimi (such as deterioration of the old center and narrow roads), awareness of these issues can lead to planning strategies that make good use of key resources like water, and the history/heritage of former water uses.

The first field work exercise tomorrow (observation and field data recording) will provide you with material for innovative ideas that would make Fushimi a more sustainable community with effective use of resources like the local water supply. The second fieldwork test (written answers) on Friday morning requires you to use the Fushimi fieldwork in a written response.

The fieldwork is supported by a small excursion this afternoon (Wednesday July 31). At the excursion, we distributed a worksheet and you wrote down your observations at several locations and made some geographical sketches. At this evening's briefing, Professor Yoshihiro Fujitsuka (Osaka City

University) presents a guest lecture entitled *Changing Functions of Waterways: the Case of Kyoto City*, and Taro Futumura describes the resources that support the fieldwork on 1 August. Professor Lex Chalmers makes comments on cartography, including map symbology, legends and design (based on Diercke Atlas material).

In addition, students have access to a number of resources. The Diercke Atlas has been distributed, and English handouts of (i) Biwako Sosui Kinenkan (Lake Biwa canal memorial museum material) and (ii) the map of Kyoto (1:25000) are available to participants.

List of materials included in the Resource Booklet

On some maps, "H" indicates Hotel Heiannomori Kyoto, and "S" indicates Chushojima Station.

1 Landform Classification Map of Kyoto Basin Landform classification map of Kyoto Basin (scale 1:130,000 approx). This map shows the geology that determines the geomorphology of the Kyoto basin. Indurated Mesozoic rocks, in an environment that experiences nearly 1500mm rain annually, have been weathered by fluvial action to produce extensive alluvial fans and river terraces in the Tertiary era. More recent fluvial deposition has produced back marshes and flood plains.
2 Flood Damage in Areas of the Kyoto Basin (scale 1:150,000 approx). The map shows that awareness of floods are based on experience of significant events.
3 Risk of Flood Hazard at Fushimi. The spatial extent of flood risk in Fushimi is shown in this map. The attached graphic indicates that inundation of 0.5 metres would be inconvenient, but a 0.5-3.0m flood would cause serious damage to property and risk to life. If the flood reached 3.0m then damage to property would be extreme and there would be deaths unless extensive warning systems and public education are undertaken.
4 The Contour Map of Fushimi (scale 1:40,000 approx.) shows the form of the alluvial fan and the extent of the marshland at the toe of the slope.
5 The map of Historic and Contemporary Use of Ground Water in Sake Production (scale 1:25,000 approx.). the map shows the depth of the ground water table in Fushimi. Access to ground water is vital to sake making.
6 Distribution of Sake Brewing Plants in Fushimi shows the extent of the sake industry in Fushimi.
7 The graphic of the Demographic Structure of Fushimi (central district) shows an ageing community profile. While population fertility may change, the existing structure suggests issues associated with care of the elderly by 2035.
8 Tourism in Kyoto and Fushimi. A number of graphics are included, along with some explanatory text.