

# **REPORT OF THE INVENTORY OF THE IDENTIFICATION CENTRE IN GORAŽDE**

**Distribution:**

Restricted

Sarajevo, 14<sup>th</sup> November 2014

ICMP.FSD.AA.719R.1.W.doc

## Table of Contents

I. EXECUTIVE SUMMARY.....	3
II. BACKGROUND .....	4
III. AIMS AND OBJECTIVES .....	5
IV. ORGANISATION .....	6
V. PROCESS .....	6
5.1. Existing case documentation and data collection .....	7
5.2. Anthropological examination methods .....	7
VI. RESULTS .....	8
6.1. DNA profiles obtained but with no DNA match made .....	9
6.2. Cases with DNA reports generated .....	9
6.3. Possible presumptive cases .....	9
6.4. Cases without apparent bone samples taken .....	10
6.5. Probable historic cases unrelated to the recent conflicts .....	10
6.6. Cases determined as ossuary material .....	10
6.7. Cases where human remains are not present.....	10
VII. CONCLUSIONS .....	11
VIII. RECOMMENDATIONS .....	12
8.1. Further work at the Identification Centre in Goražde .....	12
8.2. Continuation of the NN inventory .....	13
8.3. Country-wide organisation and standards of work .....	13
ANNEX 1: Summary table of examination results for the Goražde facility.....	15
ANNEX 2: Table of estimated cases against known cases and known unique bone profiles in BIH.....	16
ANNEX 3: Suggested process for NN facility reviews.....	17
ANNEX 4: List of case status indicators.....	20
ANNEX 5: Case Review Form templates .....	21
ANNEX 6: Table of estimated minimum number of individuals (MNI) present within the Identification Centre in Goražde assemblage by different skeletal elements .....	23

Forensic investigations concerning missing persons, including investigations concerning mass graves, other illicit burial sites and human remains they contain, are conducted under the authority of competent domestic institutions. This Summary Report presents findings and observations made by ICMP as part of the technical assistance it provides to these institutions. The competent institutions may contact ICMP for any additional information that ICMP may be able to provide. Parts of this Summary Report or its exhibits may have been redacted to protect the integrity of investigations and the privacy of persons.

## I. EXECUTIVE SUMMARY

1. In 2012, the Missing Persons Institute (MPI) estimated there were 3,277 cases of unidentified (NN) remains housed in 10 different mortuary facilities throughout Bosnia and Herzegovina (BIH) that may be missing from the conflict of the 1990s. Additionally 4,408 NN cases,<sup>1</sup> consisting mostly of ossuary material, were listed by ICMP and stored in two more facilities, the Podrinje Identification Project, Tuzla (PIP) and the Krajina Identification Project, Sanski Most (KIP). Of all these cases, 2,567 have a DNA profile but ICMP has not been able to match these to any of the ~9,000 still missing persons who are represented by ~27,000 reference DNA profiles from family members of the missing.
2. In May 2013, the Prosecutor's Office of Bosnia and Herzegovina (POBIH) issued an order that would allow for an inventory of all the facilities, following the NN Working Group (NNWG) recommendations. The objectives of the review were to determine the number of unidentified mortal remains in BIH, the status of the cases (including whether or not samples were taken for DNA testing), assess whether additional sampling was necessary for further identity testing, and to determine next steps with a view to making recommendations to the POBIH.
3. Four smaller facilities (Mostar, Nevesinje, Goražde, and Travnik) were selected for a 'pilot' inventory to determine the most effective process, and assessment steps. The third such inventory began at Identification Centre in Goražde on 12<sup>th</sup> May 2014. The Prosecutor of the Bosna-Podrinje Canton was supported by MPI, Crime Technicians and an ICMP anthropological team. All cases were examined and standard documentation completed for each using a systematic review process agreed by the Cantonal Prosecutor, which included taking new samples.
4. During the inventory in Goražde, 106 body bags were examined and reviewed. The MPI and the Prosecutor had been following the practice of counting one body bag as one "case." The status of each body bag was determined. 47 (44.3%) required an immediate change of case status due to the inventory review.
5. The body bags were found to contain a total of 191 distinguishable bodies and body parts. Many bags contain remains of multiple individuals. 7 bags (6.6%) had not apparently been sampled before. 34 new DNA samples were taken by the ICMP NN team. It should be noted that 81 DNA samples were taken in March 2014 by the pathologist in charge of these cases as a prelude to the NN work.
6. Out of 106 examined body bags, 36 (34%) already have an associated DNA match report; 3 (2.8%) had documentation or paper evidence which might provide information on potential identities (according to MPI); 1 (0.9%) was assessed to be ossuary material (which cannot be associated to known individuals); 2 (1.9%) contained no human skeletal remains; and 14 (13.2%) were assessed as probable historic cases not related to the recent conflict.
7. With DNA results, further examination will result in many of the body parts being separated and/or re-associated into individuals. This initial inventory work indicates clear steps toward resolution for 52.8% of the cases examined. Cases that already have DNA profiles but are not matched to reference DNA samples are only likely to be resolved if further work in gathering

---

<sup>1</sup> The great majority of the 4,408 NN cases at PIP (3,200 cases) and KIP (33 cases) are ossuary material which cannot be linked to identified cases and need to be permanently stored or disposed under agreement. See Annex 2 for NN case distribution by facility.

blood reference samples is undertaken, with the possibility of re-exhumations if warranted, or if it is established that the cases do not relate to the conflict.

8. Recommendations for case resolution are included in this report, which, if followed will likely allow for a considerable number of new identifications and resolved cases.
9. Recommendations have been provided to assist organization at the mortuary, and suggest requirements for phase II work. The issues recorded in Goražde have also been noted at KIP, and observed in other facilities. Funds need to be made available to address basic facility needs and renovations including painting, waterproofing, storage shelving, and cleaning. Standard procedures are needed for consistent and well-organised case cataloguing and documentation. Cases require continual management as further steps are taken and follow up work proceeds.
10. This report recommends the establishment of uniform national standards of facility organisation, examination procedures, documentation, recording, data entry, database use and data management to ensure all cases in BIH - including those in Goražde - can be effectively managed, monitored and closed. All facilities should be maintained and organised in the same way, within a common, appropriately staffed and funded system. Otherwise, existing conditions and case management can negatively affect case resolution even after revision, and produce issues which are described in further text. It is recommended that suggested changes in maintenance system are undertaken as soon as possible.
11. The focus of this initial report is to explain the physical work undertaken, how it was undertaken, and provide the summary of case statuses reached. The Prosecutor's Office of Bosnia-Podrinje Canton and MPI can readily obtain copies of the case forms which provide the data for each case, as needed. This report is also intended to serve as a guide for preparations for further NN inventory work.
12. A further report covering the full impact of the new DNA sampling results will be issued when analysis is completed.

## **II. BACKGROUND**

13. As an effort to resolve unmatched cases in BIH, ICMP and relevant local authorities agreed on instituting the NNWG, in order to review facilities housing unidentified cases exhumed during the post war period. An exchange of letters between the POBIH and ICMP set out the requirements for work and how it might be achieved. During May 2013, the POBIH ordered the case revision process to begin within four facilities housing a smaller number of unidentified cases. The facilities selected for the pilot project are Public Utility Company "Komos," Sutina in Mostar, "Memorial Ossuary" in Nevesinje, City Cemetery "Prahulje," Nova Bila in Travnik, and the Identification Centre in Goražde.
14. Proposed participants of the review process include the Prosecutors' Offices (POs) that have official custody of the cases, relevant MPI Field Offices, local police crime technicians, pathologists who are on court orders for the cases, the RS Operational Team for Tracing Missing Persons, the RS Centre for the Investigation of War and War Crimes and the Search for Missing Persons, staff of the companies storing cases, an ICMP anthropological team and other relevant parties as determined by the PO of Bosna-Podrinje Canton. The POBIH requested the relevant Cantonal POs to start with preparations for the review and to collate the case data and documentation needed.

15. It was agreed the PO of Bosna-Podrinje Canton would organise the third facility for the revision - Identification Centre in Goražde - with the PO of Bosna-Podrinje Canton putting in place a review process. The number of reported cases was listed as 91 in a list of all NN case numbers across facilities gathered by MPI in 2012 (these are listed in columns 1 and 2 of Annex 2). Two other handwritten lists obtained from the MPI Goražde Field Office staff at the start of the inventory. One listed 86 cases, while the other listed 77 cases as being under the custody of PO Bosna-Podrinje Canton with 18 cases listed which are under custody of POBIH.
16. A strategy and process for the inventory was developed by ICMP, based on the analysis of case status and issues found at PIP and KIP facilities. This provided data on the range of case issues that may be expected to occur across all mortuaries. Analysis of these cases suggests there will be an under-estimate of total cases held in some mortuaries due to the fact that many body bags will contain more than a single case of human remains. It is also likely that cases identified accurately as individuals may contain unrelated skeletal elements that have been mis-associated. Error rates identified in a sample of cases at KIP and PIP showed some 3 to 4% of cases from primary graves may be misidentified, and up to ~30% of comingled cases may have errors in body part association. This makes subsequent examinations more difficult, and identification of which bones belong to which individuals more complicated.
17. The majority of the cases re-examined at KIP and PIP have been found to be resolvable once their status has been determined. Data provided by MPI to ICMP in November 2012, stated there are 3,277 NN cases held in ten mortuary facilities in BIH, other than PIP and KIP. At these last two facilities 4,408 NN cases were listed by ICMP in 2012, consisting mostly of ossuary material which cannot be matched to any individuals. Of all of cases held nationally in the 12 facilities, 2,567 have a DNA profile but have not been matched to the 9,000 DNA profiles generated from the blood reference samples provided by relatives who claim to have missing persons from the conflict. The NN case distribution for all the facilities is provided in Annex 2, along with unique bone profile distribution for comparison.

### **III. AIMS AND OBJECTIVES**

18. The aims of the inventory pilot project and the review at Goražde cases were:
  - To formulate and undertake successful procedures for NN case resolution;
  - To determine the status of each unidentified case;
  - To make recommendations for the requirements to resolve each case;
  - To make recommendations for a national system for organising and managing all NN remains;
  - To determine a realistic time period and resources needed to inventory, review, and resolve NN cases.
19. Objectives of the review at the facility were:
  - Collate and assess existing case documentation;
  - Evaluate documents and procedures and provide recommendations to assist the local authorities to better record and monitor cases;
  - Undertake anthropological examination/re-examination of stored cases;
  - Review all case information and cross reference to determine status;
  - List requirements to achieve closure for each NN case, and make recommendations on how to do so;
  - Assess and determine organisation, storage, and management of cases;
  - List requirements and recommendations for case management system for the facility;

- List requirements and recommendations that may assist standards for identifications at national level;
- Assess results of case recommendations over time to look at efficiency of review system and monitor case closures;
- To sample cases where necessary.

#### **IV. ORGANISATION**

20. The NN work in Goražde began with a review of the facility and a check of the available documentation on 12<sup>th</sup> May 2014. The aim was to finish examination and revision of stored cases within the shortest period of time, however this took longer than anticipated as there were, on average, multiple sets of remains per body bag. This should be taken into account when undertaking the completion of further NN work.
21. Work space was created so that the anthropologists could undertake examinations, check and assess cases. The review compared the cases against the known case data, and recorded all findings on a simple two page form (NN Case Review Form, see Annex 5) that summarised all relevant information, including excavation data, known DNA samples and results, anthropological data, related evidence and effects and details of previous examinations. Data on the previous DNA sampling and findings was provided by ICMP.
22. The process was overseen by the Crime Technicians, who took new images and recorded any additional evidence found.
23. All details of examined cases were entered into a database, so that findings could more easily be managed, analysed, and updated. In many cases, records were lacking and needed to be created during the review. It became clear that dedicated data entry and case management staff were needed to keep pace with examinations.
24. The cases were counted in a number of ways. Existing records counted one body bag as one case. On examination, however, it became apparent that some bags contained the remains of multiple persons. To assess whether the contents of body bags need to be divided into separate cases, and determine the potential number of individuals present and samples that might be taken, the total number of bodies (B) and body parts (BP) within the body bags were determined and counted. The minimum number of individuals (MNI) was also assessed by counting the major bones of the body (such as cranium, mandible, left femur, right humerus, etc.) and how many times they were present (see Annex 7 for MNI summary). Results from DNA sampling will provide a third assessment of the total individuals present; this is a particularly valuable assessment, as it permits separate body parts or skeletal elements to be associated to the same individual.
25. A summary of the weekly findings was generated to show progress in number of cases examined, and their status and samples taken. This has been accumulated into a table (See Annex 1).

#### **V. PROCESS**

26. At a meeting held at the POBIH in May 2013, ICMP provided an outline for a suggested review process for the POBIH as starting point for organising the work and informing all NN working

group parties of preparatory needs. The outline also specified data collection needs prior to examinations (see Annex 3). The process was discussed and agreed by the PO of Bosna-Podrinje Canton prior to commencement of work.

### **5.1. Existing case documentation and data collection**

27. No documentation related to cases was provided to the NN team prior to the review. MPI sporadically delivered limited documentation during the revision process and shared some of their recollections of missing person's cases.
28. The case related documentation provided by the MPI was noted within the agreed ICMP NN *Case Review Form* (the template is in Annex 5) to ensure simple, rapid and transparent capture of all relevant case data. This provided ease of access and a standard document for each case upon which the decision on status and recommendations can be agreed by the PO of Bosna-Podrinje Canton, MPI, pathologists and ICMP. Additional anthropological data was recorded on standard ICMP forms for anthropological examinations: the ICMP *Body Form* and *Commingled Bones Form*.
29. The case review forms and all associated case documentation produced were scanned electronically. All gathered data along with the photographs taken by ICMP during anthropological examinations are available to any of the relevant and involved parties. Custody of documents and the databases and their use needs to be further discussed and agreed between the parties.

### **5.2. Anthropological examination methods**

30. The list of NN cases in Goražde provided for the review was physically cross-checked with the cases present at the facility. All cases examined were entered into data spread sheets. These were used to check and communicate relevant information on bone samples and DNA results for each case with ICMP matching departments.
31. It was agreed that ICMP would create lists for cases of bone samples and their status prior to anthropological examinations, as this information played a significant role for drawing conclusions concerning overall case status. Direct communication also allowed resolution of specific issues concerning problematic cases during examinations.
32. Each case found in the Identification Centre in Goražde was reviewed using standard autopsy and anthropological examination methods. Within each body bag, each body and body part was separately stored in smaller plastic bags with related DNA sample labels. Each case, body part, and sampled skeletal element was labelled with indelible metal tags.
33. DNA Samples were taken from previously un-sampled cases, and from body parts within cases which could not be associated. All DNA sampling followed the process set out in ICMPs *Standard Operating Procedure for Sampling Bone and Tooth Specimens from Human Remains for DNA Testing at the ICMP (ICMP.SOP.AA.136.1.doc)*, documented by all participating parties, and sent to the DNA laboratory for testing.
34. Quality control measures were implemented and followed throughout the complete process. Work was regularly monitored by the senior forensic anthropologist and forensic anthropologist

during examinations.

35. All examined cases were photographed by Crime Technicians from the Police Office of Bosna-Podrinje Canton, and all data entered into ICMP databases which tracked daily activities and summarised data.
36. Each case was documented by the Police Department of Bosna-Podrinje Canton under newly assigned revision numbers, with previous case numbers recorded.
37. The status of each case was determined (see Annex 4 for a list of case status indicators), and a set of recommendations provided for each examined case to indicate further requirements to allow final resolution.
38. Several categories of data for cases were tracked and documented in order to report findings for the NNWG (see table Annex 1). This shows both progress and impact of the review in the facility over time.

## **VI. RESULTS**

39. The MPI Field Office in Goražde reported 91 NN cases stored at the facility. There was insufficient data available on cases and their status. The Prosecutor of Bosna-Podrinje Canton therefore ordered review and examination of all stored cases/body bags in the facility under the agreed procedures.
40. During the initial examination of cases present at the facility, it was determined that there are additional 18 cases which were not on any of the lists. It was also not certain whether these cases were previously autopsied, examined, and/or sampled. It was initially decided to leave these 18 cases until a later date, when it will hopefully be ascertained whether they were autopsied and which municipality has jurisdiction over them, i.e. whether the ICMP NN Team has the authority to examine these cases. Ultimately, 5 of these cases were not examined as it was determined that they were not previously autopsied and the NN team did not receive a directive to examine them. One additional case which was brought to the facility mid-review was also not examined.
41. Review of the lists of reported cases showed inaccuracies and incomplete information: in addition to 91 reported cases, the team has found 18 cases at the facility, as well as 2 additional cases which were created through previous reassociations and have not been included on the lists. The total number of cases present at the facility was 112, and a total of 106 cases were examined.
42. The storage rooms of the facility were in good condition. A few body bags were torn or damaged, and had to be replaced.
43. After assessment, 34 bone samples were taken for DNA testing. Statistics and data were compiled for the cases, in order to allow assessment between facilities, simplify subsequent actions and assist case tracking.
44. The following status categories for cases have been recognized as crucial to case resolution, and need to be identified, reported, monitored and continuously updated in all cases. A simple uniform database is required to achieve this, and should be used for all mortuary facilities.

### **6.1. DNA profiles obtained but with no DNA match made**

45. Cases in which DNA profiles have been obtained but no match was found to reference blood samples form the biggest category of NN cases within any facility. The prospects for identification of these cases are not very high unless further investigation is undertaken. Some cases are historic and not related to the recent conflict (see 6.5. below).
46. The inventory found 80 cases which have DNA profiles obtained but have no matches with reference blood samples. For each documented case with this status, specific recommendations based on the examination findings have been provided and agreed, so that final resolution of the cases can be reached.

#### **➤ Recommendations**

Further investigation of the background and documentation of these cases is needed. New DNA sampling results may link cases to identified cases that have already been buried. Re-exhumation and further DNA testing is required linked cases. This will allow re-associations and determine if mis-identifications have occurred. Investigation of the AM records of missing persons reported should be checked, to see if further blood reference collection can be undertaken.

### **6.2. Cases with DNA reports generated**

47. In total 36 cases had already generated DNA reports, but cases have not been closed. However, certain issues need to be addressed:
- DNA reports were generated for cases that had already been buried (with examples of persons having been visually or DNA identified);
  - There were DNA reports generated on skeletal elements which can be re-associated with other cases;
  - One DNA report was generated but the family was given the wrong case for burial, due to errors in reading similar case labels.

#### **➤ Recommendations**

Final identifications should be made for cases that can be re-associated. Further examinations are needed to differentiate cases from the same family. New DNA sample results will allow case re-associations. Re-exhumation of associated and erroneously identified cases is needed in order to fully resolve these cases, and reach final identification.

### **6.3. Possible presumptive cases**

48. The review determined 3 cases had potential identification information, found in supporting case documentation or written on the body bags. Additional follow up investigation may determine if this information connects cases.

#### **➤ Recommendations**

Further investigation is needed into case background and documentation. Records at ICMP's Identification Coordination Division must be checked to determine if DNA match reports have previously been issued for the individuals in question, or if any genetic reference samples from family members have been obtained for these missing persons. If no references exist, investigations into the existence of surviving family members should be

conducted. Re-exhumation and DNA testing of associated cases (to allow possible re-associations) may be required.

#### **6.4. Cases without apparent bone samples taken**

49. The examination found 7 cases from which bone samples have not apparently been previously taken. 4 bone samples for DNA testing were taken from 4 of these cases. There were 3 cases for which new samples were not taken, because they were probable historic (non-conflict related) cases, or not suitable for testing.

##### **➤ Recommendation**

Tracking of the results from these bone samples is needed, which are likely to lead to further examinations, re-associations, re-exhumations and identifications. For the 3 cases not included in DNA testing, recommendations for the categories below apply (see 6.5. and 6.6.).

#### **6.5. Probable historic cases unrelated to the recent conflicts**

50. Historic cases were considered to be cases which had clear indications that they were not related to the recent conflict, and therefore fall outside the scope of the present review. Various indicators were used for assessment including personal belongings and clothing, background information on the exhumation site, taphonomy of skeletal elements (age of the bones). Review and examination indicated 14 cases in this category.

##### **➤ Recommendations**

Further investigation on background information of exhumation sites is needed in order to reach final conclusions and resolutions. Carbon testing of bone samples from skeletal assemblages may be appropriate, with one sample per assemblage taken in order to lower costs. Dr. Nermin Sarajlić, Head of the Forensic Medicine Department at the Medical School, University of Sarajevo, has investigated the possibility for the Medical School in Sarajevo to take on the housing of unclaimed historical remains for medical teaching purposes.

#### **6.6. Cases determined as ossuary material**

51. As a result of identification process throughout the years there is an accumulation of skeletal material which is assigned to the category of "ossuary material" due to the impossibility of associating the material to cases or individuals, due to its fragmentary nature or inability to extract DNA. The review found 1 complete case that should be designated as ossuary material.

##### **➤ Recommendations**

Disposal or long term storage/interment of cases should be based on instructions given from POBIH and PO of Bosna-Podrinje Canton, after appropriate engagement with other stakeholders.

#### **6.7. Cases where human remains are not present**

52. There were 2 cases without human skeletal elements present, both consisting only of personal belongings and clothing.

➤ **Recommendations**

Disposal of cases based on instructions given from the POBIH and PO of Bosna-Podrinje Canton.

**VII. CONCLUSIONS**

53. The review on behalf of the NN working group and POBIH inventoried and assessed all cases housed at the Identification Centre in Goražde. 106 out of 112 cases were inventoried during the review. The findings have yet to be agreed by the PO of Bosna-Podrinje Canton, MPI, ICMP team and pathologists.
54. Information about NN status was not available for all cases at the facility, so by default all cases were examined, except the cases which were not previously autopsied. Data was lacking for many cases. Initial gathering of data for cases was slow, and delayed determination of case status.
55. Cases were reviewed, evaluated and documented using an agreed and standard procedure. Data collation and examination was followed by anthropological examination. 6 cases remain unexamined as they were not previously autopsied or DNA sampled, and the pathologist in charge of these 6 cases could not come to perform autopsies during the NN review. Following the autopsy, it would be advisable for one or two members of NNWG team to return to Goražde and complete examination of these cases.
56. Very complex issues were identified and dealt with, such as multiple individuals and body parts found in a single case, and variation in previous examination records and sampling. These issues match the complexity of case histories seen during the re-examination of cases at the KIP mortuary in Sanski Most.
57. The status of each case was determined, as well as what identification work had been previously undertaken. Recommendations for the requirements needed to resolve each case were made.
58. With 7 body bags never apparently sampled previously, and 4 samples taken from these body bags, it is possible there will be several new identifications and case closures resulting from the new DNA and anthropological analysis.
59. A total of 34 new DNA samples were taken. The first results from the new DNA sampling (as of 9<sup>th</sup> September 2014) have provided 24 profiles, while 2 new DNA samples have failed DNA extraction, and 8 are still pending.
60. The review indicates clear steps toward resolution for 56 (52.8%) examined cases. Other cases may be resolved with further assessment including applying DNA results from new sampling, re-exhumations, undertaking re-associations, further case investigation and analysis, and if additional blood reference samples are collected.
61. Reorganization of storage system at the facility was performed, with suggestions on maintenance of case storage demonstrated to the facility staff. Without on-going management of the cases the issues encountered during the review will likely be repeated.
62. Recommendations to assist with completion of the first phase of the NN review at other facilities are made below. Preparatory work in gathering all case documentation and preparing facilities

for work is the key to achieving this.

63. Recommendations to assist with on-going identification work (phase II) as a result of the review including uniform requirements and standards for case management are made below. It is essential that once the review is undertaken in each facility, that there is continuation of case management, tracking and organisation. The ability to maintain a system that continues to make identifications, close cases and prevents complex issues from developing will be highly dependent on the resources provided by state and local authorities. Dedicated case management staff, transparent database systems and adequate facilities are the keys to achieving this.
64. The NN inventory in Goražde was completed and the objectives of the POBIH for the inventory phase of NN work at Identification Centre in Goražde have been achieved.
65. With known status, the cases within the facility are ready for further work including analysis of new DNA results, investigation of documentation/case background, re-examinations and re-exhumations which will allow final case resolutions to be agreed by local authorities.

## **VIII. RECOMMENDATIONS**

### **8.1. Further work at the Identification Centre in Goražde**

66. A meeting to discuss the report findings should be undertaken to determine next steps, review and implement recommendations and confirm which cases may be closed immediately.
67. Further efforts should be made to locate any additional case records.
68. Further investigation from appropriate parties should be encouraged in order to pursue identification leads and recommendations for case closure generated by the NN review.
69. Phase II work should be undertaken once DNA results from newly taken samples become available. This will require data analysis, re-examinations, re-associations and re-exhumations which will lead to new identifications and case closures.
70. Continuity of case management is essential. ICMP is employing two experienced case managers specifically to support the NN project to deal with cases that have been reviewed, until a recommended uniform standard and system might be put in place. The case managers are needed to control on-going cases at the Goražde facility.
71. Phase II work in Goražde will need to be coordinated and scheduled in relation with on-going inventories at other facilities. It is likely results from DNA sampling will be provided from November 2014. DNA results will probably lead to re-associations and re-exhumations with further associated activities needed, but after these actions it is highly likely that number of stored cases will start to drop, therefore associated costs will be lowered.
72. The Goražde facility needs investments to further improve the standards for holding human remains.

## **8.2. Continuation of the NN inventory**

73. The next facilities to be reviewed should be advised to gather all necessary documentation on cases prior to examination efforts. These facilities will benefit from lessons learned during the previous reviews, in particular regarding preparation and organisation.
74. A reconnaissance of each facility by the NN team should be made to assess specific review needs. Estimates for work completion should be determined taking into account available resources, data sources (including listed number of NN cases, total number of stored cases, and number of unique unmatched bone profiles) and experiences from previous facility reviews.
75. It is recommended that all listed cases are reviewed at each facility, not just those initially categorised as NN. Given the complexity and commingling of many cases, closing NN cases is also dependent on status and checks of identified cases, including the relevant documentation for all cases held. This also important in view of cases having been moved between facilities.
76. In order to better systematize the management and identification of unidentified exhumed human remains stored in mortuaries, it is important to establish, agree and follow at least minimal standards and procedures in all facilities housing human remains. This will enable transparency and quality assurance with possibility of management, further investigation and comparison of case statuses in all those facilities on a national/state level.

## **8.3. Country-wide organisation and standards of work**

77. A clear issue that has been identified is the lack of continuity of case management over time. It is recommended that a team of case managers is employed to cover on-going cases across all facilities. An estimated eight case managers can maintain databases, update records and control cases for all 12 mortuaries.
78. A uniform, country-wide management and standards system is required. Common standards of work, examination, management, storage, organisation and monitoring are needed for all cases and for the 12 facilities across BIH.
79. A database system is need for all BIH cases. All cases need the same documentation, and same records entered in the database. A common database will allow quality assurance.
80. Transparent and shared monitoring of cases by PO of Bosna-Podrinje Canton, MPI, pathologists and ICMP is needed through shared access to the database system via an on-line inquiry centre.
81. Inventory of all facilities needs to continue as quickly as possible. As the number of cases held at many facilities may be an underestimate, it is likely the NN case review phase I work will take into 2015 to be completed.
82. Once inventories are done, phase II work needs to begin once DNA results are provided by ICMP. This means that NN phase I and phase II work will need to be undertaken at the same time, with work being carried out at more than one facility at once. This needs staffing and funding.
83. A common agreed country-wide strategy and plan is needed to persuade families to allow re-exhumations to be undertaken, so that cases can be re-associated and errors rectified.

84. A common agreed country-wide strategy and plan is needed to persuade families who received traditional/presumptively identified cases in past to give DNA reference samples, if they have not previously done so. A shortage of relevant reference samples has been identified as a key limitation to resolving many unmatched DNA samples. An approach of 'give blood, help another family' is needed, or many samples from NN cases will remain unmatched.
85. The positive outcome of the NN inventory work is that a large number of cases can be resolved in 12-24 months after review, and once new DNA results are provided.
86. Additional cases may be subsequently resolved if re-exhumations can take place, and the required additional blood reference samples are collected.
87. The time estimates do not include examinations and analysis of additional cases coming to mortuaries from new excavations.

**ANNEX 1: Summary table of examination results for the Goražde facility**

In Goražde, each body bag has been counted as a case. The MNI represents minimum number of individuals assessed by anthropological assessment of repeating bones. Bodies (Bs) and body parts (BPs) are identified as separate cases of human remains. Many body bags contain multiple Bs and BPs.

Week	No. of Bags examined	No. of cases determined (Bs, BPs)	No. of new samples taken	No. of cases not autopsied	No. of cases not sampled	No. of Bs and BPs not sampled	No. samples taken from previously un-sampled cases	No. of possible historic cases	No. of cases with status change
12-16/05/14	10	11/20	2	NA	3	4/7	2	4	6
19-23/05/14	12	31/36	10	NA	0	0	0	0	12
26-30/05/14	17	17/42	13	NA	3	3/4	0	3	12
06-06/06/14	17	17/22	0	NA	0	0	0	3	5
09-13/06/14	11	13/20	6	1	1	1/1	1	1?	5
16-20/06/14	15	15/17	0	NA	0	0	0	1?	2
23-27/06/14	14	14/20	0	NA	0	0	0	1	2
30/06-04/07/14	10	12/14	3	NA	0	0	0	0	3
TOTAL:	106	130/191	34	/	7	8/12	3	13?	47

**ANNEX 2: Table of estimated cases against known cases and known unique bone profiles in BIH**

Listed in this table are the numbers of unidentified cases estimated to be in each mortuary facility. Also listed are the numbers of unique profiles which have been generated from bone samples taken from cases, but which remain unmatched.

The cases in facilities (other than KIP and PIP) are estimated by counting body bags. So one case = one body bag. For PIP and KIP all cases have been determined by anthropological assessment and DNA review, and are separated into discreet Bs and BPs. As each facility is reviewed (as with Goražde) the actual number of bodies and body parts will be established, as well as the number of body bags, and the numbers will be added to column 3 and 4.

	<b>Mortuary</b>	<b>Estimated NN Cases 2012</b>	<b>Bs/BPs after review 2013</b>	<b>Total cases stored 2013</b>	<b>Unmatched unique DNA profiles (2012)</b>	<b>Unmatched bone profiles (2012)</b>	<b>Notes</b>
1	Memorial Ossuary Banja Luka	357	-	-	406	477	
2	Krajina Identification Centre – KIP “Sejkovaca,” Sanski Most	208	<b>190</b>	<b>312</b>	190	288	47 cases Identified but not buried. 67 re-exhumations needed
3	Memorial Ossuary for Odžak, Orašje	134	-	-	118	131	
4	Tuzla Commemorative Centre, Tuzla	1,042	-	-	346	Combined with PIP	
5	Podrinje Identification Centre – PIP Tuzla	4,200	<b>3,852</b>	<b>5,376</b>	138	807	NN number includes 3,200 ossuary cases. 532 cases identified but not buried. 1,000 re-exhumations needed
6	City Cemetery “Prahulje,” Nova Bila, Travnik	40	-	-	107	138	
7	JKP Visoko Mortuary Visoko	1,084	-	-	801	1,146	
8	Memorial Ossuary “St. Mark,” Miljevici, Sarajevo	254	-	-	189	215	
9	Identification Centre, Goražde	91	-	-	87	96	
10	Sutina Mortuary, Mostar	189	<b>395</b>	<b>204</b>	125	182	50% under-sampling of 395 Bs/BPs
11	Memorial Ossuary, Nevesinje	58	<b>94</b>	<b>61</b>	47	54	ICMP list 71 cases for which there are bone profiles
12	Đurđevak Mortuary, Modriča	15	-	-	13	15	

### **ANNEX 3: Suggested process for NN facility reviews**

---

Participants agreed that the inventory of ossuaries and resolving the issue of unidentified human remains should be undertaken as soon as possible and organised in stages:

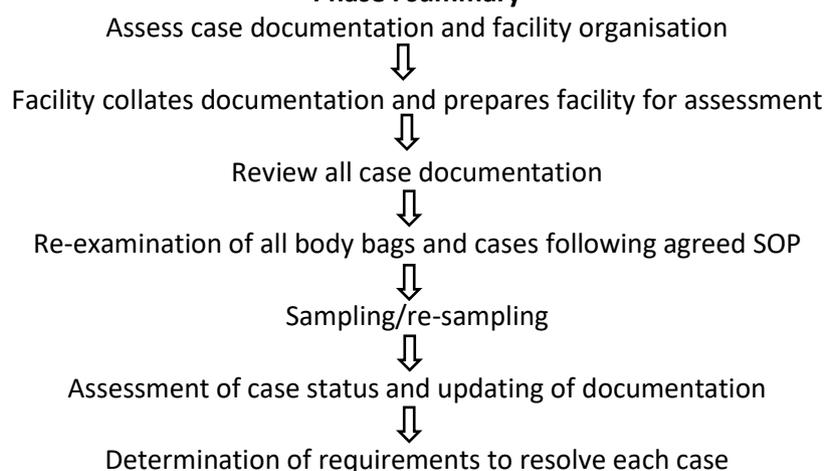
- I. Phase I: conduct inventory in mortuaries/ossuaries, i.e. establish facts and inspect all facilities used for human remains storage;
- II. Phase II: implement decisions about NN human remains following completion of inventory of mortuaries.

ICMP suggests the following procedures are followed for the review of each case during the inventory:

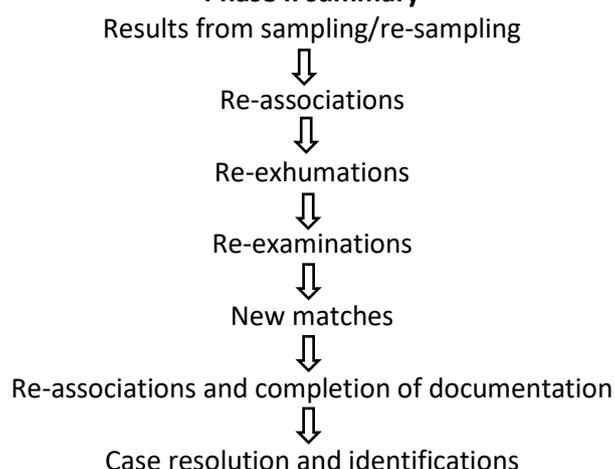
1. A request for documentation to be collated on all cases will be submitted to the facility and all participants before work commences. A checklist will be provided so the correct documentation and relevant facts can be collected for each case;
2. A complete list of all cases held in each facility will be provided, including all NN cases;
3. A list of all NN cases examined during the inventory will be kept, and compared with the list provided by the facility;
4. Assessment will be made to determine the site type the case originates from, and whether the case may be historic;
5. Documentation for each case will be reviewed before the inventory of each case is made. This includes documentation of DNA samples and reports. Any missing documentation or data including photographs will be noted;
6. List personnel who undertook field and mortuary examinations will be made
7. Photographs will be taken of the case and container;
8. Each case will be prepared for inventory and examination. Details of the storage and condition of the cases will be recorded. Any labelling will be examined and recorded. Washing and cleaning of skeletal remains, personal belongings and clothing associated to the case will be made if necessary to allow required recording;
9. The cases will be laid out in anatomical position and examined. The findings and the details observed will be compared to records. Any discrepancies will be recorded;
10. The examination will consist of the following steps (following ICMP procedures for KIP):
  - a. Assessment to determine number of cases,
  - b. Check association of Skeletal Elements,
  - c. Determination of MNI,
  - d. Designation of a Skeletal Assemblage,
  - e. Inventory,
  - f. Checking of known re-associations based on case data,
  - g. Determination of potential new re-associations and associated cases (note re-association work will be undertaken in phase II of the NN inventory),
  - h. Determination of need for issuing of additional cases numbers. Issuing of numbers as necessary by pathologists and office of the prosecutor,
  - i. Determine if additional DNA samples are needed (note these will be taken in phase II of the NN inventory),
  - j. Biological profile/Assessment of age at death, sex, stature, individual characteristics
  - k. Assessment of ante-mortem, peri-mortem and post-mortem trauma, and taphonomic indicators,
  - l. Describe and document case/s using body, body part and commingled case forms,
  - m. Check against corroborating Information;
11. Check clothing and personal effects, determine if they have been recorded (note further recording of clothing etc. will be undertaken in phase II of the NN inventory);
12. Check other artefacts, determine if they have been recorded (note further recording of clothing etc. will be undertaken in phase II of the NN inventory);
13. List any evidence that may assist in dating the case;

14. Determine if documentation provides any information on an ID based on presumptive methods for each case;
15. Determine if documentation provides any information on an ID based on positive methods other than DNA for each case;
16. Assess curation of documentation for the case;
17. Summarise case findings- providing context of case, description, any issues, general comments on the *Case Review Form*;
18. Review case with pathologist, case manager and others, agree and confirm case status and recommendations;
19. State the case status (after inventory);
20. State what actions need to be taken to complete the identification process for each case, including further re-examination;
21. State if new cases have been found;
22. State if new DNA samples are needed. Take new samples. All samples will be numbered and described:
  - a. First DNA sample needed,
  - b. Additional DNA sample needed;
23. Generate agreed list from database on which cases need further examination, resolution and completion;
24. Entering Case inventory details into database;
25. Generate report for facility with recommendations and statistics to assist with planning and undertaking further action to complete case identifications.

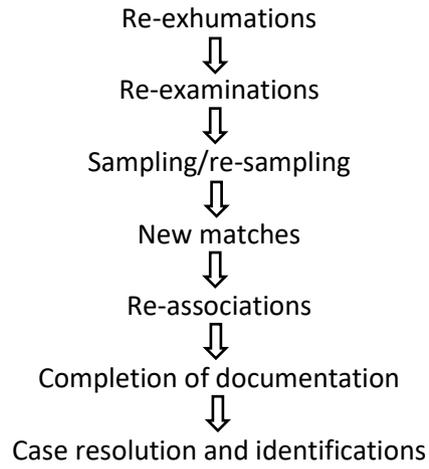
#### **Phase I summary**



#### **Phase II summary**



**Phase III summary**



#### **ANNEX 4: List of case status indicators**

---

All cases need their status designated. Assessing status determines the steps needed to resolve the case and complete the identification process. Cases may have one or more statuses. Examples of status include:

1. No determined status;
2. Case with completed identification process;
3. Case without a DNA profile;
4. Case previously identified through presumptive methods only;
5. Case previously identified through positive methods other than DNA;
6. Case previously named through presumptive methods only;
7. Case previously named through positive methods other than DNA;
8. Case has profile but no match;
9. Case named based on DNA reports, but identification not confirmed;
10. Case awaiting re-examination;
11. Case is part of commingled bag that has not received full anthropological assessment;
12. Case is found to be from different individuals and requires further actions;
13. Case consists of re-associations undertaken pre-inventory;
14. Case found to require further DNA samples;
15. Case waiting for DNA match results from submitted samples;
16. Case has been associated with already presumptively identified and buried cases (they are out of reach for sampling);
17. Permissions to exhume related cases not received from families;
18. Families refuse to give consent for re-exhumation;
19. Loss/lack of information on location of burial plots of related cases;
20. Case is mislabelled;
21. Change in original case number determined;
22. Partial or lack of documentation for case;
23. No track of DNA samples from a case and their statuses;
24. Change in numbering of DNA samples determined;
25. Confused information on DNA samples statuses (info that there was bone to bone match and later info that DNA sample extraction has failed and vice-versa);
26. Case is non-human, or is not identifiable human tissue;
27. Case is possibly not related to the period of interest.



## CASE REVIEW FORM

<b>Participants in previous examination:</b>	<b>Documentation provided:</b> Exhumation report <input type="checkbox"/> Photographs <input type="checkbox"/> Autopsy report <input type="checkbox"/> Primary anthro examination <input type="checkbox"/> Identification report <input type="checkbox"/> DNA reports <input type="checkbox"/> Other: _____
--	---

Were clothing, personal effects or other items recorded during primary exam?	NO <input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> :
--	---

Were clothing, personal effects or other items recorded during case review?	NO <input type="checkbox"/> YES <input type="checkbox"/> :
---	--

Does evidence need to be submitted to police?	NO <input type="checkbox"/> YES <input type="checkbox"/> N/A <input type="checkbox"/> :
---	---

Skeletal designation:	ANTHRO MNI:	DNA MNI:	Nr. of cases present:	Inventory taken: YES <input type="checkbox"/> NO <input type="checkbox"/>
Documents/forms used in inventory (attached):				Case photographs:
Body <input type="checkbox"/> Commingled case <input type="checkbox"/>				
Other <input type="checkbox"/> (describe):				

### Biological assessment

BP	Sex M/F/I	Age range	Stature range	Comments (individual characteristics, trauma assessment, taphonomic indicators)

<b>Comments</b> (summary of previous examinations, discrepancies with original examination results; information on identification based on non-DNA methods, etc):  <div style="height: 100px;"></div>
---

Additional case numbers required (no's & type)	Note potential re-associations (list cases):
--	--

**List Describing Case Status Types, NN Case Review 2013**

All cases need their status designated. Assessing status determines the steps needed to resolve the case and complete the identification process. Cases may have one or more statuses. Examples of status include:

<ol style="list-style-type: none"> <li>1. No determined status.</li> <li>2. Case with completed identification process.</li> <li>3. Case without a DNA profile.</li> <li>4. Case previously identified through presumptive methods only.</li> <li>5. Case previously identified through positive methods other than DNA.</li> <li>6. Case previously named through presumptive methods only.</li> <li>7. Case previously named through positive methods other than DNA.</li> <li>8. Case has profile but no match.</li> <li>9. Case named based on DNA reports, but identification not confirmed.</li> <li>10. Case awaiting re-examination.</li> <li>11. Case is part of commingled bag that has not received full anthropological assessment.</li> <li>12. Case is found to be from different individuals and requires further actions.</li> <li>13. Case consists of re-associations undertaken pre-inventory.</li> <li>14. Case found to require further DNA samples.</li> <li>15. Case waiting for DNA match results from submitted samples.</li> </ol>	<ol style="list-style-type: none"> <li>16. Case has been associated with already presumptively identified and buried cases (they are out of reach for sampling).</li> <li>17. Permissions to exhume related cases not received from families.</li> <li>18. Families refuse to give consent for re-exhumation.</li> <li>19. Loss/ lack of information on location of burial plots of related cases.</li> <li>20. Case is mislabelled.</li> <li>21. Change in original case number determined.</li> <li>22. Partial or lack of documentation for case.</li> <li>23. No track of DNA samples from a case and their statuses.</li> <li>24. Change in numbering of DNA samples determined.</li> <li>25. Confused information on DNA samples statuses (info that there was bone to bone match and later info that DNA sample extraction has failed and vice-versa).</li> <li>26. Case is non human, or is not identifiable human tissue.</li> <li>27. Case is possibly not related to the period of interest.</li> </ol>
--	--

Recorded by: \_\_\_\_\_

Date: \_\_\_\_\_

Checked by: \_\_\_\_\_

Date: \_\_\_\_\_

**ANNEX 6: Table of estimated minimum number of individuals (MNI) present within the Identification Centre in Goražde assemblage by different skeletal elements**

The MNI was assessed in each bag on a weekly basis.

The total MNI was then re-assessed at the end of the inventory to provide an estimate for the total assemblage of cases (see table below). The highest estimate of individuals present in the facility is provided by 92 skulls. The anthropological MNI determined in this way is usually a considerable underestimate considering the significantly larger number of Bs and BPs, and in comparison to the number of individuals as determined by unique DNA bone profiles.

Skeletal element	Number of repeats
Skull	92
Right femur	66
Mandible	65
Left femur	63
Left tibia	63
Right fibula	61
Left humerus	59
Right tibia	58
Right humerus	57
Left radius	57
Right radius	56
Right ulna	55
Left ulna	54
Left MT#1	53
Left calcaneus	52
Left fibula	50
Left metatarsal #2	49
Right metacarpal #2	46
Left talus	45
Right talus	45
Right calcaneus	44
Right metatarsal #1	44
Left metacarpal #2	41
Right metatarsal #2	40
Right metacarpal #1	35
Left metacarpal #1	32