1. Introduction

Byblos is selected as one of the first 32 cohort cities of 100RC to develop a customised resilience strategy. The City needs to undertake a number of activities to establish the foundation and future direction of the City’s resilience strategy, one of these activities is the Preliminary Resilience Assessment (PRA).

The PRA is an exercise that was conducted by the Byblos Technical Team (BTT) and Strategy Partner, Arup, during a two-day workshop in Byblos on 27-29th October 2014. Its objective was to synthesise and analyse the outputs and findings of Phase I data collection and resilience building activities, in order to confirm a selection of mutually agreed themes for the Byblos City Resilience Strategy, and Focus Areas for further investigation during Phase II.

Themes

The themes were identified by referring to the City Resilience Framework (CRF, Rockefeller Foundation/Arup, 2014) to identify the dimensions, drivers and indicators of resilience where Byblos is currently performing well, or where the City could/should improve its approach. This review helped us to determine which parts of the CRF Byblos should focus on in order to improve the City’s resilience. This was contextualised using information about local conditions and the City’s political and financial powers to take action in different sectors, to help with explaining why these issues are important. The themes therefore reflect a combination of drivers that the City is currently taking little action to address, and capacities that the City is already acting upon to some extent but which are expected to become increasingly important in the future.

Focus Areas

Having defined the high-level themes for the Resilience Strategy, a series of specific research questions was identified to help with structuring the work plan for Phase II. Since Phase II will be delivered over a short 4-month period, we recognise that the full breadth of each theme cannot be tackled. The purpose of the research questions is to focus the Phase II work to ensure that we gather the key information that we need to define a practical set of city resilience actions for the Byblos Strategy.

This report summarises the methodology and key findings from each stage of the PRA process, including the themes and Focus Areas. The stages of the PRA process include, Preliminary Asset Scan, Shocks and Stresses review, Stakeholder Perceptions Assessment, City Actions Inventory, and City Profile. All
The information presented here has been sourced through data collection and stakeholder engagement activities that took place in Byblos between July to November 2014; the data has not been verified beyond what we were told by stakeholders. A separate, detailed report of all relevant information has also been prepared to support this summary document.

2. Methodology

This diagram outlines the methodology used to undertake the PRA, including the key data inputs that formed part of the assessment.

Byblos is a “Pilot City” in the first cohort of 100RC, and therefore the process and the tools including the Stakeholder Perceptions Assessment, City Actions Assessment, and the risk analysis were pilot versions. Byblos has pioneered the process.

The PRA was undertaken in a two-day workshop attended by BTT and Arup. The workshop activities drew on the following deliverables that were prepared during Phase I:

- **Preliminary asset scan** | This was undertaken using a pilot version of AECOM’s risk analysis tool, to identify the significant assets that exist in Byblos, which contribute to the City’s physical, economic and social resilience.
• **Shocks and stresses review** | This was undertaken using AECOM’s pilot risk analysis tool, to identify the most significant shocks and stresses that affect Byblos today, or which are anticipated to affect Byblos in the future. By aggregating shocks and stresses with assets, it was possible to identify the scale of possible consequences that could occur in relation to the City’s drivers for resilience.

• **Stakeholder perceptions** | Stakeholders’ perceptions of Byblos’ strengths and weaknesses were gathered from a broad range of stakeholders during a series of engagement activities that took place in Phase I. These were assembled and analysed using the Stakeholder Perceptions Assessment Tool, to provide an indication of which resilience drivers the City has, or could develop.

• **City actions** | Resilience actions and plans currently underway in Byblos were assembled and analysed using the City Actions Assessment Tool. The analysis helped to identify how the efforts currently being taken by the Municipality, multilateral organisations, civil society groups and other partners are helping Byblos to build its drivers of resilience.

• **City profile** | Contextual information was drawn from the City Profile to determine the Municipality’s powers to take action on building resilience. Information on governance (areas of control/influence) and financial resources (municipal budget) were particularly valuable.

The analysis of these deliverables is presented here, using the City Resilience Framework (CRF, Arup/Rockefeller Foundation, 2014) as a common framework for comparison. Each section of this report explains how the data has been transposed into the CRF.

By bringing these analyses together, it is possible to understand the key resilience challenges in Byblos; the “gaps” in capacity which the City may wish to address; and the opportunities for the City to build on existing action to enhance its resilience in key areas. These, in turn, helped the City to formulate its five themes and the Focus Areas, which will be used as the basis for work in Phase II and will eventually shape the contents of the City Resilience Strategy.

Since completing the PRA workshop, the themes and Focus Areas have been presented to Mayor Ziad Hawat, who has validated them for further work in Phase II.

### 3. Shocks and stresses: What is Byblos exposed to?

**Asset Scan**

As part of the PRA, an Asset Scan was undertaken to ascertain which aspects of the City can already be considered as ‘assets’, i.e. things that support the City’s people, place, knowledge and organisation. Five main categories of assets were identified: physical (man-made) infrastructure; environment and landscape assets; historic architecture; social assets; and economic assets, such as traditional fishing and market trading.

**Summary of City Assets**

**Physical (man-made) assets:**

- **Water** | Water purification plant and storage centre; Irrigation channels; Septic tanks; Water treatment plants; Drainage assets/Stormwater.
- **Power** | Electricity generation and transmission infrastructure; Back-up electricity network.
- **Communications** | Fixed line telephone network; Mobile telephone network (transmission towers);
Cable TV network.
*Transport* | Main roads; Bridges; Sidewalks/pedestrian walkways.
*Community* | Hospitals; Community centre; University.

**Environmental and landscape assets:**
*Inland* | Parks and open spaces; Small rivers and river valleys; Agricultural land; Clean air; Ground/aquifer water quality.
*Coastal* | Beaches; Coastline; Sea water quality.

**Architectural assets:**
Historic residential buildings and traditional homes; Historic religious buildings; Historic cultural buildings; Archaeological sites; Old marketplace; 1960-90 construction.

**Social assets:**
Stable and peaceful community; Cultural traditions and customs; Cultural heritage; Education; Municipal leadership/governance.

**Economic assets:**
Traditional fishing; Traditional market trading.

**Shocks and Stresses**
A range of shocks and stresses were also identified, including those that affect Byblos now, and those which may emerge in the future. Shocks and stresses were reviewed in terms of the level of impact they might have on the City’s assets.

**Summary of Shocks and Stresses**

**Shocks:**
*Hydrological* | Flash/surface flood; Coastal storm surge; Drought.
*Geophysical* | Rockfall; Earthquake; Tsunami.
*Meteorological* | Tornado; Heatwave; Wildfire/bush fire.
*Infrastructure* | Major infrastructure failure (e.g. bridge/building collapse); Hazardous materials incident.

**Stresses:**
*Ecological* | Sea water pollution; Ground water pollution; Air pollution; Reduction in green spaces.
*Climatological* | Sea level rise.
*Geophysical* | Coastal erosion.
*Social* | Unplanned migration; Population growth; Loss of historic customs and cultural heritage; Loss of historic knowledge and awareness; Rise of extremism ideology.
*Governance/Political* | Unregulated construction; Lack of law enforcement; Lack of urban planning; Regional conflicts.
*Infrastructure* | Ageing infrastructure;
*Economic* | Recession/poor economy; Traffic congestion; Low income households; High (increasing) dependence on tourism sector; “Brain drain”; Decline in traditional economies.
Aggregation of Assets, Shocks and Stresses

The diagram above displays an aggregation of the data collected on assets, shocks and stresses in Byblos, overlaid on to the CRF. The diagram illustrates the Dimensions, Drivers and Indicators in the CRF, in which Byblos’ assets are concentrated and which are threatened by Byblos’ shocks and stresses. This information is communicated in terms of potential ‘consequence’ for the City. For example, the darkest red (‘high consequence’) indicates parts of the CRF in which a lot of assets are concentrated and the risk of those assets being affected by shocks and stresses is high (there are lots of relevant shocks and
stresses). At the other end of the scale, the palest pink indicates areas of the CRF in which there are no relevant assets in the City, and no perceived threat from shocks or stresses – i.e. the likely consequence is very low.

The diagram illustrates that Byblos’ driver to Foster Economic Prosperity is most at risk from the interaction of shocks and stresses with assets. In other words, the assets that Byblos has that most directly support economic prosperity are exposed to many of the shocks and stresses that affect the City. Within this driver, Business Continuity, Inward Investment, and Local Economy are likely to experience the greatest consequences from shocks and stresses. Unplanned migration, economic dependency on tourism and the service industry, and environmental constraints, were identified as the shocks and stresses most likely to affect the economy. It is likely that others (e.g. lack of urban planning, traffic congestion, and ageing infrastructure) will also have indirect consequences for the economy in the long term. Economic prosperity is an important aspect to consider in the Focus Areas.

By comparison, the data suggests that the City’s other drivers related to the Economy and Society are not at high risk. There are fewer assets, shocks and stresses identified in relation to stability, security, justice and cohesion. This may be because the City is already managing these areas well, so related shocks and stresses were not prioritised during data collection; or because the Municipality relies on other organisations’ assets to contribute in these areas, including those of community groups and central government.

Beyond Economy and Society, the PRA demonstrates that the dimension that could experience the greatest consequences from shocks and stresses is Infrastructure and Environment. This dimension includes assets such as main roads, electricity transmission, bridges, sidewalks and water infrastructure, as well as natural and landscape assets like rivers, air and the coastline. These are all assets with far-reaching consequences for the effective functioning of the City as a whole, and which are highly exposed to physical shocks and stresses like flooding, earthquakes, pollution and erosion, as well as non-physical stresses like population growth and lack of urban planning. The scale of consequences in all drivers of this dimension may be viewed as a significant risk to Byblos.

The diagram on the opposite page illustrates that Health and Well-being - especially the drivers to Support Livelihoods and Employment, and Ensure Public Health Services - is also exposed to a medium level of consequence from the shocks and stresses affecting Byblos. Assets in this dimension include hospitals and the reliable provision of basic services like energy and clean water, which are again exposed to physical shocks and stresses, in addition to the pressures of urban development and population growth.

Leadership and Strategy appears likely to suffer the lowest consequences from shocks and stresses. In this dimension, few pertinent assets, shocks or stresses were identified. Nevertheless, Long-term and Integrated Planning was viewed as a driver at medium risk from shocks and stresses, reflecting the unregulated construction and lack of urban planning that currently takes place in Byblos. Of the

1Note that this diagram has been developed on the basis of only data collected by the City as part of the Preliminary Resilience Assessment.
Leadership and Strategy drivers, this will be the most important indicator to take forwards into the Focus Areas.

4. Stakeholder Perceptions: What do people think?

The Stakeholder Perceptions Assessment was completed by the Byblos Technical Team as the key output of stakeholder engagement activities during Phase I. Data entered into the module is drawn from a range of stakeholder interviews, telephone calls and meetings/focus groups. Its purpose was to assess existing perceptions about the City’s strengths and weaknesses, with a view to assessing Byblos’ existing perceived level of resilience. The diagram above illustrates the output from Tool A, describing the City’s perceived performance in each of the CRF drivers’ in terms of ‘Area of strength’, ‘Doing well, but can improve’, ‘Need to do better’.

The analysis reveals that stakeholders in Byblos feel the City could do, or needs to do, better with respect to all drivers of the CRF. Nevertheless, the weight of opinion was greater in relation to some drivers.
Infrastructure and Economy is the system that most stakeholders perceive to be in need of improvement. Within this system, Communication and Mobility and Continuity of Critical Services receive the most attention. These perceptions are aligned with recognised stresses related to ageing infrastructure, traffic congestion, lack of urban planning, and population growth, which supports the idea that these aspects are important for the City’s future resilience. While stakeholders perceive that the City is performing better with respect to protecting man-made and natural assets, there is more that can be done here too.

Stakeholders perceive the City’s main strength to lie in Promoting Cohesive and Engaged Communities; a finding that may account for the lack of shocks and stresses considered to be affecting this driver. However, while an overwhelming proportion of stakeholders feel the City is succeeding, there are also opportunities to do more. This evidence demonstrates that stakeholders are aware of the importance of cohesive and engaged communities, and highlights the weight that stakeholders attach to improving this driver. This is an important consideration for the Focus Areas.

Meeting Basic Needs is another relatively important topic for stakeholders, although perceptions are mixed. Likewise, there are mixed perceptions in relation to drivers for Leadership and Strategy. Also notable, while Fostering Economic Prosperity emerged as the capacity at greatest risk from shocks and stresses in Byblos, only two stakeholders raised it as an issue.
5. Actions: What is currently happening in Byblos that contributes to resilience?

Byblos’ existing resilience actions were compiled in the City Actions Inventory, which helps to demonstrate how the City is currently responding to the CRF drivers and indicators of resilience.

The findings, illustrated above, show that the City is taking – or plans to take – a high number of actions focused around *Fostering Economic Prosperity, Promoting Cohesive and Engaged Communities*. 

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**Legend:**
- **High**
- **Medium**
- **Low**
and *Fostering Long-term and Integrated Planning.* These drivers reflect areas that emerged as important in the analysis of assets, shocks and stresses, and the stakeholder perceptions. This confirms that these three drivers are considered to be important action areas for Byblos, and it will be crucial to maintain momentum to continue enhancing these capacities in the future. This is a key finding to help inform the Focus Areas.

The fewest existing actions relate to *Meeting Basic Needs, Ensuring Continuity of Services, Providing Reliable Communication and Mobility, and Empowering a Broad Range of Stakeholders.* These four drivers were all perceived to be relatively important to stakeholders. Continuity of Services and Communication and Mobility were likewise highlighted by the shock/stress analysis as important drivers to strengthen. There may be a number of reasons why the Municipality is taking fewer actions in these areas, including a lack of direct control or influence over critical infrastructure such as energy and water supply, and a lack of financial resources to invest in major infrastructure projects like mobility. Nevertheless, the lack of action in these important areas should be further considered through the Focus Areas.
City Budget: How is the City’s current expenditure being directed towards resilience?

In addition to reviewing the actions underway that will contribute to Byblos’ resilience, we have also analysed the City’s budget to identify how the existing expenditure is directed towards resilience drivers.

The following diagram illustrates the relative scale of expenditure that relates to each part of the CRF. This analysis has been prepared to allow a direct comparison with real actions.

The city budget analysis shows that there are many resilience drivers and indicators for which the Municipal government currently has little or no financial resources. This includes critical infrastructure such as communication, mobility and water. Notably, expenditure on energy is largely to provide power for the municipal council building. The shortage of municipal funds for infrastructure may partially explain why there are few actions underway in these drivers, and why stakeholders feel that more needs to be done. This analysis highlights a need to identify alternative funding sources to support some key resilience actions. It also highlights the relative fluidity of Byblos’ small municipal budget, which is not tied to specific departments or agencies in the same way as other cities.

Specific parallels can be seen between the budget and actions analyses. For example, the Municipality spends a moderate part of its budget on Promoting Cohesive and Engaged Communities – particularly initiatives related to local identity and culture – which is clearly reflected in the high number of actions.
However, variations also exist. For example, there is a moderate number of actions related to *Fostering Long-term and Integrated Planning*, yet the municipal budget for this driver is relatively small. This suggests that the City may be leveraging funds from external sources to undertake actions. The ability to leverage such funds is likely to be critical for the delivery of a Resilience Strategy in a city with a highly constrained municipal budget.

6. Gaps, Opportunities and Key Messages

Gaps and Opportunities
This diagram highlights the key gaps in Byblos’ current resilience, identified by synthesising all of the Phase I inputs outlined above. The drivers that are highlighted here indicate those that Byblos could consider addressing in its Focus Areas, in order to develop a more holistic approach to overall city resilience.
The diagram above highlights the key opportunities in Byblos’ current resilience, identified by synthesising all of the Phase I inputs outlined above. The drivers that are highlighted here indicate those that Byblos could consider building on either in its Focus Areas or in the future plans of the city, in order to strengthen these drivers.
Key Messages for the Themes and Focus Areas

Economic Prosperity
The PRA demonstrates some convergence between the risks the City faces and the level of action it has taken to relieve or resolve these challenges. This is particularly true in the area of Economy and Society, and specifically with respect to Fostering Economic Prosperity which is an area of both risk and activity. The fundamental importance of the economy, as the back-bone of any city, implies that a high level of action must continue in this area if the City is to maintain and enhance its resilience. There are some major challenges to Byblos’ economy – such as regional conflict, recession, dependence on tourism and a decline in traditional industries, and an influx of migrants to the City – which the City has no option but to respond to if it is to survive. Furthermore, diversification of the economy will help to Support Livelihoods and Employment for the growing population, and to generate a wider revenue base for the municipal government whose budget is currently dependent on local taxes. For these reasons, the PRA has emphasised Economic Prosperity as an issue to be reflected in the Focus Areas.

Cohesive Communities and Social Stability
The assessment has shown that Community Cohesion and Engagement is the most significant capacity for stakeholders in relation to the City’s resilience, and that there is a lot of existing action in this area to maintain and enhance this driver. While this is not specifically identified as a gap or opportunity, it relates closely to Social Stability, which has been highlighted as a potential risk and an area of low existing activity. The major social and political stresses that exist in the region surrounding Byblos threaten to destabilise the City’s existing social fabric. Byblos is already facing an influx of migrants and refugees from political conflict in Syria. If action is not taken to maintain social stability, there is a risk that the cohesive communities that stakeholders value so highly may not sustain in the longer term. The Focus Areas should therefore recognise the relationship between Social Stability and Cohesive Communities, and support efforts to improve understanding of this relationship and take effective action.
This work should also connect with the capacity to *Empower a Broad Range of Stakeholders*, which has likewise been highlighted as an opportunity. By taking this into account, the Focus Areas can incorporate principles of inclusivity and democracy in the face of migration and population growth.

**Cohesive Communities, Cultural Identity and Protection of Man-Made Assets**

Within the driver of *Cohesive and Engaged Communities*, stakeholders showed particular concern about the loss of cultural and historic identity in Byblos. A shared history has underpinned communities for many years, and it is thought that cohesion may be lost if this heritage is threatened. Stresses arise from unplanned migration, increasing tourism, lack of urban planning, and the loss of knowledge and awareness about cultural heritage. Aspects of this issue can be observed within the drivers to *Protect and Enhance Natural and Man-made Assets, Foster Economic Prosperity* and *Foster Long-term and Integrated Planning*, all of which have been identified as areas of opportunity for Byblos. Actions are already being taken to protect the heritage sites and buildings in Byblos, but efforts need to be stepped up to maintain the City’s sense of place and the economic activities (such as tourism) that are grounded in the unique local history.
Protection of Natural Assets
The City’s natural assets are also a principal foundation of its cultural heritage, providing resources that support the health and well-being of its people while also underpinning the tourism sector. The future impacts of climate change in Byblos are a key concern, particularly due to existing risks of flash and coastal flooding, erosion, heatwaves, and drought. The protection of natural assets is viewed as an essential mechanism to protect the City’s built infrastructure and ensure that the resource demands of a growing population can be sustained in the long term.

Reliable Mobility and Integrated Urban Planning
Reliable Communication and Mobility is highlighted as a key gap in Byblos’ existing resilience. This capacity is raised by stakeholders as an area in need of improvement, yet there is little activity underway to address it. Furthermore, there is a medium level of risk to this driver due to a concentration of relevant assets, shocks and stresses. The lack of existing action may reflect the absence of a municipal
budget for transport, as well as the complexity of mobility issues in a historic city that has grown rapidly in a context of unregulated construction and a lack of urban planning. The challenges of mobility in Byblos cannot be considered in isolation of Long-term and Integrated Planning – an area of opportunity. These are issues that must be addressed by the Resilience Strategy due to the criticality of mobility to secure economic prosperity, cohesive communities and effective emergency management. However, financing efforts in this area is likely to be a fundamental challenge for the Municipality.

Basic Needs and Public Health
In relation to the City’s people, the satisfaction of basic needs and management of public health services are revealed respectively as a gap and an opportunity for the City. Stakeholders highlight the need to improve the delivery of basic needs, while the risk analysis identifies a degree of risk related to public health. However, there is currently relatively little city action on Health and Wellbeing. The Municipality’s power to take action in these areas is considered to be relatively low, due to the privatisation of healthcare services and the central government control of critical infrastructure, including energy and water. While it is unlikely that the Municipality can take significant action on these issues on its own, there may be opportunities to integrate some of the indicators of Basic Needs and Public Health within other Focus Areas, and to take actions that influence the behaviour of other entities. Stakeholder engagement during Phase II can help to include these entities in decision-making for the Resilience Strategy and raise their awareness of prevailing issues.
7. Themes and Focus Areas

As a result of the PRA process, the following Themes and Focus Areas have been identified for Byblos. These are a complex product of:

- The anticipated consequences of shocks and stresses on Byblos’ main assets
- The perceptions that stakeholders have about Byblos’ existing level of resilience
- The actions that are currently underway or planned, which contribute to the City’s resilience
- The financial resources available for the Municipality to take action in the future
- The Municipality’s level of control and influence over City assets.

Since completing the PRA workshop, these Themes and Focus Areas have been reviewed by Mayor Ziad Hawat and validated as the critical issues for Byblos’ resilience.

Theme 1: Preserve the peacefulness of the City

Peace has long been a characteristic of Byblos, and it remains a strong value of the City’s citizens. However, with rapid population growth, internal migration and an influx of refugees from Syria, maintenance of social cohesion is a growing challenge. 1.5 million Syrian refugees have recently sheltered in Lebanon; a country whose own population is just 4 million. The region is threatened by armed conflicts resulting from injustice, oppression, lack of freedom, radical ideologies, ruthless dictatorship and religious extremism. Regional instability is accelerating an existing economic crisis and escalating problems of unemployment.

For Byblos, preservation of peace is fundamental to its future ability to survive and thrive.

<table>
<thead>
<tr>
<th>Relevant existing assets in Byblos</th>
<th>Historic residential, cultural and religious buildings, which were conducive to a community spirit and symbolise the old identity of the City</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Traditional homes, which were planned in community groups</td>
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<tr>
<td></td>
<td>Old marketplace, which was a community focal point</td>
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</tbody>
</table>
Focus Areas
As mentioned previously, we recognise that the full breadth of this theme cannot be tackled during a limited 4-month period in Phase II. We will focus on a series of research questions, as summarised below. We envisage that, by answering these questions, we can move quickly towards a set of clear and practical actions to enhance Byblos’ resilience with respect to peace and social stability. A full list of research questions is provided in Appendix 1.

<table>
<thead>
<tr>
<th>Research question</th>
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<tbody>
<tr>
<td><strong>Understand key issues</strong> a.</td>
<td>What are the major current/future internal/external threats to safety and security in Byblos?</td>
</tr>
<tr>
<td><strong>Assess municipal powers</strong> b.</td>
<td>What aspects of the City’s peacefulness does the Municipality have power to control or influence?</td>
</tr>
<tr>
<td><strong>Review potential actions</strong> c.</td>
<td>What interventions is the Municipality able to take to preserve</td>
</tr>
</tbody>
</table>
peace in Byblos?

d. What are the possible interventions that the business sector could take?
e. What are the possible interventions that the community sector could take?
f. How could a city masterplan help to preserve a sense of community, a sense of aesthetic (abiding by high standards of architectural design) and a sense of history in the face of changing demographics?
g. How can we enhance the role of social entrepreneurs and community actors in our strategy-making process?
h. How can we change stakeholders’ total decision-making dependency on higher authorities, and introduce a more inclusive understanding of citizenship and its role within the resilience process?

Evaluate potential costs

i. What is the scale of costs to the Municipality in relation to the possible interventions?

Identify third party support

j. What sources of external support are available to assist in preserving the peacefulness of Byblos?
k. What action would the Municipality need to take to access this support?
l. What is the role of central government and international organisations (UN) in limiting the risk to the city in face of the current situation?

**Theme 2: Preserve historical assets, and protect and revive customs and traditions**

Byblos’ rich archaeology is nothing less than an open air museum, with sites and artefacts dating back to the early days of the City and now incorporating medieval churches, towers, ramparts, and old traditional houses as well. The historical building techniques - such as walls that are strengthened with granite columns for robustness against earthquakes - demonstrate that the ancient civilisations who inhabited the City were thinking of resilience early on.

Cultural customs and religious traditions revolve around the historic sites. For example, Byblos’ citizens still celebrate the restoration to Christianity of a church that was once invaded by the Ottomans and turned into a stable for horses.

The heritage and traditions of the City are increasingly becoming diluted or forgotten due to lack of education, youth migration, and changing demographics. Furthermore, a lack of building regulations to protect and preserve historic buildings means that archaeological sites and traditional structures can be demolished. The growing numbers of tourists to the City are not controlled, meaning that archaeological sites are gradually degraded by visitors. If this erosion of cultural heritage is not curbed, Byblos will lose the reason why so many visitors are attracted to the City in the first place.
For Byblos, preservation of historical assets, culture and customs is an important aspect of resilience.

<table>
<thead>
<tr>
<th>Relevant existing assets in Byblos</th>
<th>Historic residential, cultural and religious buildings</th>
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<tbody>
<tr>
<td></td>
<td>Archaeological sites</td>
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<td>Traditional homes</td>
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<td>Old marketplace</td>
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<table>
<thead>
<tr>
<th>Relevant shocks and stresses in Byblos</th>
<th>Ageing infrastructure</th>
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<tr>
<td></td>
<td>Sea level rise</td>
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<td>Coastal erosion</td>
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<td>Unplanned migration</td>
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<td>Population growth</td>
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<td></td>
<td>High dependence on tourism economy</td>
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<tr>
<td></td>
<td>Lack of urban planning and regulation</td>
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<tr>
<td></td>
<td>Increasing tourist numbers</td>
</tr>
<tr>
<td></td>
<td>Loss of historic customs, heritage and cultural awareness</td>
</tr>
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</table>

| Existing relevant actions | Renovation of main street facades to restore traditional character of the City |
|                          | Pedestrianisation of the medieval city to reduce the impact of cars and other vehicles on historic buildings |
|                          | Byblos 2025 – development of an urban masterplan |
|                          | Legislation to impose a maximum height restriction on residential construction in the old city |
|                          | Construction of a pedestrian walkway along the archaeological sites, to reduce the impact of people on the sites |
|                          | 3D projection about the history of Byblos, displayed on the walls of the port to educate/raise awareness |
|                          | The Museum of the Alphabets celebrates the original phonetic alphabet which was conceived in Byblos |
|                          | Rehabilitation of the Roman road network |
|                          | CHUD World Bank project, phase 1-3, to rehabilitate the old medieval city, create parking areas and sidewalks, etc. |
|                          | Rehabilitation of parking areas and installation of parking meters to reduce traffic congestion and the impact of vehicles on historic buildings. |

**Focus Areas**

As mentioned previously, we recognise that the full breadth of this theme cannot be tackled during a limited 4-month period in Phase II. We will focus on a series of research questions, as summarised below. We envisage that, by answering these questions, we can move quickly towards a set of clear and practical actions to enhance Byblos’ resilience with respect to cultural heritage. A full list of research questions is provided in Appendix 1.

<table>
<thead>
<tr>
<th>Research question</th>
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| Understand key issues | a. What is the projected demographic change in Byblos to 2050? |
b. Which of Byblos’ heritage assets and customs/events are the most significant in terms of
   i. Local identity and culture
   ii. Human history
   iii. Economic value for the City?
c. How can we make the most of our main assets to make the city a centre for cultural tourism that attracts tourists from around the world (media coverage, exhibitions, twinning with other cities, etc.)?

Assess municipal powers
d. What aspects of the City’s culture and heritage does the Municipality have power to control or influence?

Review potential actions
e. What interventions is the Municipality able to take, which can contribute to preserving valued historic assets in Byblos?
f. What interventions is the Municipality able to take, which can help to preserve and revive valued local customs and traditions?
g. What are the possible interventions that the business sector could take? (retail, restaurants, etc.)
h. What are the possible interventions that the community sector could take? (NGOs, etc.)
i. How could the City’s history and identity be integrated within a city masterplan?

Evaluate potential costs
j. What is the scale of costs to the Municipality in relation to the possible interventions?

Identify third party support
k. What sources of external support are available to support the Municipality’s efforts to preserve cultural heritage?
l. What action would the Municipality need to take to access this support?

Theme 3: Understand and respect environmental limits
Byblos is a city rich in natural heritage, which includes a diverse coastline, river valleys, beaches, orchards, agricultural land, and the surrounding hillside woodlands. These features contribute to the beauty of the City and its setting, and offer valuable services. However, they are under threat from urban growth and human intervention. Rapid population growth, unplanned urbanisation and unregulated construction is causing encroachment of developments into river valleys and the surrounding landscape, along with pollution of rivers and aquifers with waste and sewage, and occasional droughts due to rising water demands. In the 2006 conflict in the region, an oil spillage caused significant environmental damages.

Understanding and respecting environmental limits will be critical to improve the resilience of the City to grow sustainably within its local context.

Relevant existing assets in Byblos
- Main roads, railways, bridges and pedestrian infrastructure
- Fishing port
- Historic buildings and archaeological sites
| Relevant shocks and stresses in Byblos | Parks and open spaces  
Beaches (3 types)  
Small rivers and river valley  
Coastline  
Agricultural land  
Clean air  
Sea water  
Ground water/Aquifer  
Tourist resorts (the backbone of the city’s economy) |
|------------------------------------------|--------------------------------------------------|
| Climate change  
Sea level rise, coastal storm surge  
Coastal erosion  
Sea water pollution  
Ground water pollution  
Air pollution  
Man-made waste (solid waste)  
Drought  
River flood  
Flash/surface flood  
Traffic congestion  
Population growth  
Lack of urban planning  
Lack of green spaces  
Hazardous materials accident |
| Existing relevant actions | Development of a public park, incorporating green space  
Pedestrianisation of the old town during summer and weekends, to reduce air pollution arising from traffic congestion  
Introduction of electric vehicles in the old city, including 9 vehicles to transport pedestrians into and from the old town  
Topographical survey underway to prepare an aerial map of the City’s land uses, which will help to manage environmental impacts  
Preliminary public transport study to assess the feasibility of bus lines in Byblos  
Trial project on solid waste segregation  
Byblos 2025 – development of an urban masterplan which will help to mitigate environmental impacts  
Simulation exercise for tsunami scenario, carried out by UNDP/DRR unit, including school evacuation  
Awareness campaign led by school students to promote waste segregation in households  
Study to assess potential for river bed restoration, particularly through improved water treatment via the existing sewage treatment plant  
Construction of a new wastewater treatment plant  
Improved connection of sewage infrastructure to wastewater plant  
Rehabilitation of parking areas and installation of parking meters to |
help with reducing traffic congestion and improving air quality in the old town
- UNDP hazard and risk assessment study for critical infrastructure in Byblos.

Focus Areas
As mentioned previously, we recognise that the full breadth of this theme cannot be tackled during a limited 4-month period in Phase II. We will focus on a series of research questions, as summarised below. We envisage that, by answering these questions, we can move quickly towards a set of clear and practical actions to enhance Byblos’ resilience with respect to environmental management. A full list of research questions is provided in Appendix 1.

<table>
<thead>
<tr>
<th>Research question</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Understand key issues</strong></td>
</tr>
<tr>
<td>a. What are the medium- to long-term climate change projections for the Byblos area?</td>
</tr>
<tr>
<td>b. To what extent is Byblos likely to be affected by sea level rise?</td>
</tr>
<tr>
<td>c. What are the possible impacts of climate change on the City and land uses around the City?</td>
</tr>
<tr>
<td>d. What is the existing air quality at critical locations in the City, and how does this compare with the WHO thresholds?</td>
</tr>
<tr>
<td>e. What is the existing water quality at critical locations?</td>
</tr>
<tr>
<td>f. What are the point sources of water pollution in water courses around Byblos?</td>
</tr>
<tr>
<td>g. What role do our day-to-day actions play in increasing the City’s overall pollution?</td>
</tr>
<tr>
<td>h. What are the current costs of community disengagement in environmental concerns?</td>
</tr>
<tr>
<td>i. How is the presence of tourists (visiting once) and their lack of engagement increasing environmental damage/pollution?</td>
</tr>
<tr>
<td>j. How could rules and regulations help to control that?</td>
</tr>
<tr>
<td><strong>Assess municipal powers</strong></td>
</tr>
<tr>
<td>k. What aspects of the City’s natural environment does the Municipality have power to control or influence?</td>
</tr>
<tr>
<td><strong>Review potential actions</strong></td>
</tr>
<tr>
<td>l. What interventions is the Municipality able to take, which can contribute to protecting the City from potential climate change impacts?</td>
</tr>
<tr>
<td>m. What interventions is the Municipality able to take, which can help to restore the quality of air and water in and around the City?</td>
</tr>
<tr>
<td>n. What are the possible interventions that the business sector could take?</td>
</tr>
<tr>
<td>o. What are the possible interventions that the community sector could take?</td>
</tr>
<tr>
<td>p. How could a city masterplan help to protect Byblos from future climate change, and preserve environmental quality in the City?</td>
</tr>
<tr>
<td>q. What is the Municipality’s role in improving the community’s knowledge and capacity concerning environmental issues?</td>
</tr>
<tr>
<td>r. How could the Municipality incorporate awareness programmes</td>
</tr>
</tbody>
</table>
and help citizens to feel more concerned about overall pollution/environmental damage?

| Evaluate potential costs | s. What is the scale of costs to the Municipality in relation to the possible interventions?  
| t. What are the potential costs related to the time lag between current environmentally damaging activities and future environmental incentives/regulations? How can we address these costs in the intervening period? |

| Identify third party support | u. What sources of external support are available to support the Municipality’s efforts to protect the City’s environment?  
| v. What action would the Municipality need to take to access this support?  
| w. What is the role of national government and multinational NGOs in supporting Byblos’ environmental aims? |

### Theme 4: Regulate urban development and improve accessibility and linkages of the City

When the population was smaller, Byblos was a human scale city – low rise, compact, with a balance of open space. In the past, families lived near to each other; a son would build a home for his family next door to his parents’ house. The old city remains at this human scale, but the wider city has expanded to accommodate the growing population. New development has been uncontrolled and unregulated. Urban development patterns have emerged with less community focus, which has led to a reduction in social cohesion and interaction, and a loss of accessibility around the City. Urban sprawl has affected both the physical and social structure of the City. Today, the City is fragmented; a major highway cuts the City in half. A fragmented city is not a resilient city. Improving accessibility and linkages around the City is a particular challenge.

Regulating urban development is a critical focus area for Byblos. This includes introducing more open space, pedestrian areas, improved transport links and comprehensive traffic management. It also includes improved monitoring of city growth via a modern GIS system.

### Relevant existing assets in Byblos
- Main roads, railways, bridges and pedestrian infrastructure
- Fishing port
- Historic buildings and archaeological sites
- Parks and open spaces
- Historic residential, cultural and religious buildings
- Traditional homes, which were low rise and low density
- Community centre
- Coastline

### Relevant shocks and stresses in Byblos
- Ageing infrastructure
- Coastal erosion
- Unplanned migration
- Population growth
- Unregulated construction
Focus Areas
As mentioned previously, we recognise that the full breadth of this theme cannot be tackled during a limited 4-month period in Phase II. We will focus on a series of research questions, as summarised below. We envisage that, by answering these questions, we can move quickly towards a set of clear and practical actions to enhance Byblos’ resilience with respect to urban development and accessibility. A full list of research questions is provided in Appendix 1.

<table>
<thead>
<tr>
<th>Research question</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Understand key issues</strong></td>
</tr>
<tr>
<td>a. How is demand for housing and key services projected to change to 2050?</td>
</tr>
<tr>
<td>b. What are the future development needs?</td>
</tr>
<tr>
<td>c. What is the current pattern of land uses in the City, and what are the critical land use/planning conflicts to be addressed?</td>
</tr>
<tr>
<td>d. How effectively does the road dimension accommodate existing and planned development?</td>
</tr>
<tr>
<td>e. What is the driver of the City to accommodate a growing population?</td>
</tr>
</tbody>
</table>
Assess municipal powers

f. What aspects of the City's urban development planning does the Municipality have power to control or influence?

Review potential actions

g. What interventions is the Municipality able to take, which can improve regulation of development and construction?
h. How could a city masterplan help to address the lack of green space in the City?
i. How can the city masterplan help to address the City’s accessibility/connectivity challenges?
j. How could a public transportation plan address accessibility/connectivity challenges?
k. How could laws to pedestrianise parts of the City help to improve accessibility?
l. What are other initiatives that the Municipality needs to take to enable inclusivity and accessibility though its masterplan design?

Evaluate potential costs

m. What is the scale of costs to the Municipality in relation to the possible interventions?
n. What are the social, economic, political, environmental and healthcare costs of developing and executing a new urban plan?
o. How would the City’s accessibility be influenced in the process of urban development?

Identify third party support

p. What sources of external support are available to support the Municipality’s efforts to regulate urban development and improve accessibility?
q. What action would the Municipality need to take to access this support?
r. How could the Municipality engage civil society in its planning process?

Theme 5: Promote and maintain economic diversity

The ancient city had a variety of economic activities. Today, the economy relies mostly on tourism. Regional unrest, migration of young people (brain drain), shifting economies, and the decline of traditional trades are having an impact on the economic prosperity and resilience of the City, and its attractiveness to investors. Unemployment is a growing challenge.

This focus area considers the diversification of Byblos’ economy, particularly expanding the City’s role as a hub for banking, retail, education, artistic and cultural activities, as well as an advanced medical centre for the region north of Beirut. By creating economic opportunity and enabling sustainable livelihoods, the City can support its population into the future and generate the financial resources to secure its survival.

Relevant existing assets in Byblos

- Historic buildings and archaeological sites
- Old marketplace
- Coastline
- Traditional fishing industry
- Traditional market trading
<table>
<thead>
<tr>
<th>Relevant shocks and stresses in Byblos</th>
<th>Transport connections to Beirut</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unplanned migration</td>
<td>Major university</td>
</tr>
<tr>
<td>Population growth</td>
<td>Low income households</td>
</tr>
<tr>
<td>Recession/poor economy</td>
<td>Recession/poor economy</td>
</tr>
<tr>
<td>Unemployment</td>
<td>Low income households</td>
</tr>
<tr>
<td>High dependence on tourism economy</td>
<td>Recession/poor economy</td>
</tr>
<tr>
<td>Lack of urban planning</td>
<td>High dependence on tourism economy</td>
</tr>
<tr>
<td>Increasing tourist numbers</td>
<td>Lack of urban planning</td>
</tr>
<tr>
<td>“Brain drain”</td>
<td>Increasing tourist numbers</td>
</tr>
<tr>
<td>Regional conflicts</td>
<td>“Brain drain”</td>
</tr>
<tr>
<td>Decline of traditional industries</td>
<td>Regional conflicts</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Existing relevant actions</th>
<th>Preliminary public transport study to assess the feasibility of bus lines in Byblos, which could help with access to employment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Byblos 2025 – development of an urban masterplan which could help to stimulate economic growth</td>
</tr>
<tr>
<td></td>
<td>Renovation of main street facades to restore traditional character of the City and maintain tourist attraction</td>
</tr>
<tr>
<td></td>
<td>CHUD World Bank project, phase 1-3, to rehabilitate the old medieval city, create parking areas and sidewalks, etc.</td>
</tr>
<tr>
<td></td>
<td>Survey of city population to monitor population growth rates</td>
</tr>
</tbody>
</table>

**Focus Areas**

As mentioned previously, we recognise that the full breadth of this theme cannot be tackled during a limited 4-month period in Phase II. We will focus on a series of research questions, as summarised below. We envisage that, by answering these questions, we can move quickly towards a set of clear and practical actions to enhance Byblos’ resilience with respect to economic diversity. A full list of research questions is provided in Appendix 1.

<table>
<thead>
<tr>
<th>Research question</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Understand key issues</strong></td>
</tr>
<tr>
<td>a. How is demand for jobs and employment projected to change to 2050?</td>
</tr>
<tr>
<td>b. What are the future employment needs?</td>
</tr>
<tr>
<td>c. How are the current economic sectors contributing to Byblos’ overall economic growth and development?</td>
</tr>
<tr>
<td>d. Could the introduction of a public transport network help to limit traffic congestion, and how would this influence the economy and prospective investments?</td>
</tr>
<tr>
<td>e. Could investments in infrastructure create a new economic sector in the City and create new jobs?</td>
</tr>
<tr>
<td><strong>Assess municipal powers</strong></td>
</tr>
<tr>
<td>f. What aspects of the City’s economic development does the Municipality have power to control or influence?</td>
</tr>
<tr>
<td><strong>Review potential actions</strong></td>
</tr>
<tr>
<td>g. What interventions is the Municipality able to take, which can contribute to:</td>
</tr>
<tr>
<td>i.</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>i. expanding existing business activities</td>
</tr>
<tr>
<td>h. Could the Municipality and communities exploit a more diverse economy and profit from its opportunities?</td>
</tr>
</tbody>
</table>

### Evaluate potential costs

<table>
<thead>
<tr>
<th>l.</th>
<th>m.</th>
<th>n.</th>
<th>o.</th>
<th>p.</th>
<th>q.</th>
</tr>
</thead>
<tbody>
<tr>
<td>l. What is the scale of costs to the Municipality in relation to the possible interventions?</td>
<td>m. What are the potential costs of introducing new infrastructure?</td>
<td>n. How can new economic sectors and investments influence the City’s demographics?</td>
<td>o. How could introducing new investments and new economic sectors to the City influence its revenue from tourism?</td>
<td>p. How can the Municipality support local innovative and creative prosperous ideas?</td>
<td>q.</td>
</tr>
</tbody>
</table>

### Identify third party support

<table>
<thead>
<tr>
<th>r.</th>
<th>s.</th>
<th>t.</th>
</tr>
</thead>
<tbody>
<tr>
<td>r. What sources of external support are available to support the Municipality’s efforts to drive economic development and increase access to employment?</td>
<td>s. What action would the Municipality need to take to access this support?</td>
<td>t.</td>
</tr>
</tbody>
</table>

**NB. By addressing the five Focus Areas, we are also investing in the creation of new economic sectors, which will create jobs and diversify the city’s economy whilst also solving other problems.**

**Addressing Cross-Cutting Themes**

The five themes are not independent of one another and cannot be addressed in isolation. A number of the Focus Areas proposed for Phase II will overlap with one another, and it will be fundamental that we take a strategic view across all of them to ensure that information is shared and cross-cutting questions are answered using the most relevant evidence and insight from each Focus Area. This will help to ensure that shared opportunities are identified and leveraged to maximise the co-benefits for the City. If approached strategically, we anticipate that the benefits of our research and development of initiatives in each of the themes can ripple out across sectors and different parts of the City. At the current time, it is difficult to anticipate where these co-benefits will emerge, but we will keep this on the agenda for all Focus Areas throughout our work in Phase II.
**Conclusion and Next Steps**

By synthesising the main outputs of Phase I, the Preliminary Resilience Assessment (PRA) has enabled us to develop five themes and corresponding Focus Areas, which are most relevant and critical for Byblos’ future resilience. The Focus Areas will help to structure the Scope of Work for Phase II and to assign tasks to individuals and Working Groups. Through further investigation of the Focus Areas, we will be well-placed to identify a series of strategic actions/initiatives that the City can take forwards into the Resilience Strategy.

The next step from this PRA report is to develop a more detailed Scope of Work for Phase II, which will include specific planning for the management and delivery of tasks related to each Focus Area.