Appendix A:
Detailed overview of methods used in this evaluation

Contents

Tables

A detailed plan of the methods used in the evaluation of Big Noise Govanhill and Big Noise Raploch is available at www.gcph.co.uk.

The vision for the evaluation is to capture important learning from the implementation and impact of Sistema Scotland's work in Govanhill and Raploch as a means of furthering understanding, within Scotland and beyond, of effective, early years, social interventions targeting disadvantaged communities. The primary focus of the evaluation is to ascertain the contribution made by Sistema Scotland towards transforming the health, wellbeing and prospects of children and young people residing in the programme sites who engage with the project.

To achieve this there are two overarching aims for the evaluation. Aim one relates to assessing the outcomes and impacts of the programme at varied levels. Evaluation aim two concerns the process and related learning from the implementation of the programmes in Raploch and Govanhill.

Evaluation aims

Evaluation aim 1. Assess, over the long-term, the outcomes of the Big Noise programmes in Raploch and Govanhill, in terms of social and behavioural development, educational performance and attainment and future impacts on the lives, health and wellbeing of the children and young people participating in the programmes. Additionally, the social impacts at the family and community levels will be assessed. The impacts of the programme at a societal level will be assessed through an economic study, which will trial the use of a cost-benefit analysis.

Evaluation aim 2. Gain insight into Sistema Scotland's ethos and vision, their approaches to selecting programme sites, adapting programme delivery to local structures and requirements, local partnership working and the characteristics of the staff and implementation which are critical to enhancing inclusion, engagement and retention and achieving positive outcomes for the individual, family and community.

A particular strength of this initial phase of evaluation has been collaboration involving three partners in three distinct components of the evaluation:

- **Component 1 (C1) GCPH:** Sistema Scotland/Big Noise process learning and measuring programme impacts.
- **Component 2 (C2) Education Scotland:** assessing quality of Big Noise Raploch education and learning.
- **Component 3 (C3) Glasgow Caledonian University:** health economic cost-benefit analysis of Big Noise Govanhill.

Evaluation component 1: GCPH, Process learning and measuring programme impact

This component is concerned with process learning from the delivery of the Big Noise and measuring the impacts of the programme. Measuring these impacts addresses evaluation aim 1 and required mixed methods. Qualitative methods were used to investigate short-term impacts, while quantitative data linkage and the tracking of participant outcomes will be used to track long-term impacts over the life-course of participants involved. Process learning relates to evaluation aim 2 and was approached using a range of primarily qualitative methods. A range of ten different methods were used in this component, which are outlined below.

Method 1: Semi-structured interviews

Semi-structured interviews were conducted with a total of 126 individuals spanning three role categories, which were: 'frontline staff', 'management/operations staff' and 'Big Noise partners'. The interview schedule covered a number of broad themes, with appropriate supplemental questioning tailored to the participant's role category. The semi-structured format allowed participants to describe and discuss their views in detail, as the interview schedule was sufficiently flexible to accommodate tangential discussion points. Table 1 below summarises the interview categories, the number of participants and the content of the interviews.

Table 1. Evaluation component 1, method 1: semi-structured interviews.

	Number	**Content**
Big Noise front-line staff	25 musicians 13 cover musicians 16 volunteers 5 supported learning assistants **TOTAL: 59**	- Personal role, experience and qualifications - Vision and ethos of Sistema Scotland - Resources essential for role - Strengths of Big Noise delivery - Potential improvements in Big Noise delivery - Observed impacts of Big Noise; children, families, community - Personal challenges and rewards - Any other feedback
Sistema Scotland and Big Noise management and operations staff	4 Big Noise operational delivery staff 8 Sistema Scotland core staff 6 Sistema Scotland board members **TOTAL: 18**	As per frontline staff interview with supplemental questions: - Strengths and improvements in how Sistema Scotland is run - Sistema Scotland's relationship with other partners - Future developments of the organisation Some role-specific questions were also asked around how funding is leveraged, how budgets are set and spent, the policies that are in place within Sistema Scotland, how decisions are made and the quality of the information and discussion at Board meetings.
Sistema Scotland and Big Noise partners	Sistema Scotland partners: 1 Royal Conservatoire of Scotland 1 BBC Scottish Symphony Orchestra 1 National Youth Choir of Scotland 1 National Youth Orchestra of	All Sistema Scotland strategic partner and Big Noise delivery partner interviews were role-specific in nature, taking into account profession and

	Scotland 1 Consultant educational psychologist 2 Consultant behaviour specialists 1 Local authority head of music service Big Noise Govanhill partners: 2 Govanhill Housing Association 1 Govanhill Community Police 1 Govanhill primary schools educational psychologist 1 Govanhill schools play therapist 1 Glasgow City Council Financial Services 1 Glasgow City Council Education Services 1 Glasgow South Community Health Partnership 2 Headteachers 1 Depute headteacher 1 Nursery staff 12 Classroom teachers of Primary 1-4 children Big Noise Raploch partners: 1 Stirling Council Senior Manager (current) 1 Stirling Council Senior Manager (previous) 3 Headteachers 1 Head of Nursery 1 Depute headteacher 2 High school teachers 1 Early Years Officer 2 Educational psychologists 2 Stirling Council Youth Services 1 Local church organisation 1 Raploch Community Partnership 1 Raploch Urban Regeneration Company **TOTAL: 49**	relationship to Sistema or the delivery of Big Noise. However the following broad questions were asked of all interviewees: - Strengths of the community you work in (appropriate to some Sistema partners, but not all) - Challenges in the community you work in (appropriate to some Sistema partners, but not all) - Strengths of the way Sistema Scotland is run/Big Noise is delivered - Improvements in the way Sistema Scotland is run/Big Noise is delivered - Impacts of the Big Noise programmes: children; families; and communities - Strengths of your relationship with Big Noise/Sistema Scotland - Improvements in your relationship with Big Noise/Sistema Scotland - Any other feedback

It became apparent during the interview process that describing Big Noise processes and impacts separately was not natural to most participants and the two elements of the interview (as outlined in the table above) were inextricably interwoven. For the purposes of clarity, however, process learning and impacts were analysed and are reported separately in the results section of this report.

Interviews were audio recorded using a portable digital device, with the permission of participants. These files were then transcribed verbatim by an external agency, generating textual data. This textual data was analysed using Atlas.ti to conduct a thematic analysis[1]. Thematic analysis involves coding participants' responses into

categories that systemise and summarise the content of the data[2]. In this case, themes were not pre-determined but were identified from within the data. This ensured that the range and diversity of participants' views were captured and taken into account during the analysis. The quality of the analysis was ensured through the collaboration of two analysts, Aileen Campbell (Audit Scotland) (AC) and Lisa Garnham (GCPH) (LG)[2-4].

After conducting the interviews, both analysts (AC, LG) read through a sample of transcripts independently to identify key issues and initial codes. AC and LG then discussed and refined these codes before coding half of the interviews. During coding, where material did not fit these initially identified codes, new codes were added. Once half of the interviews had been coded, AC and LG discussed and refined these codes with a third analyst, Chris Harkins (GCPH) (CH)[5]. The remaining interviews were then coded by AC and LG, with particular attention paid to those perspectives and themes that contrasted with the themes already established[6]. Towards the end of the study no new themes emerged, which suggests that the major themes had been identified. Throughout this final stage, AC and LG continually discussed, refined and re-organised these themes into a coherent narrative. This final set of themes was discussed and finalised by AC, LG and CH at the end of the coding process.

Method 2: Participant drawing exercise (Govanhill)

Approximately 110 children (aged 6-9 years old) participating in the Big Noise Govanhill took part in a creative drawing exercise designed to gather their views and feedback on participating in the Big Noise programme[7,8]. Children participating in the drawing exercise were allocated to groups of between four and seven individuals and prompted to draw a picture about what they like about the Big Noise. Children were then asked to draw what they did not like about the Big Noise. Each group had a facilitator who prompted the children to describe their drawings and discuss the reasons for their choice of drawing. Picking up on particular aspects of the drawing proved to be a useful stimulus for discussion where children became co-interpreters of their own image[9]. Almost all of the children drew an image; a minority of children did not speak at all during the exercise.

Table 2. Evaluation component 1, method 2: participant drawing exercise (Govanhill).

	Number	**Content**
Big Noise Govanhill participants	110 programme participants (aged 6-9 years) **TOTAL: 110**	Drawing exercise and related discussion: - what is liked about Big Noise - what is not liked about Big Noise

The discussion that emerged from the drawing exercise was recorded using a portable digital device. Consent to take part in the exercise, and for the recording of group discussion, was gathered from all participants' parents and guardians. The digital audio files were then transcribed verbatim by LG. The images drawn by the children, alongside the transcripts, constitute the data gathered in this exercise.

Data was analysed in a thematic manner. Themes were identified by two analysts (LG and AC) working collaboratively and these were organised into those reasons given for liking Big Noise and reasons given for not liking Big Noise. There was a

high degree of congruence in the views expressed by the children and this provided clear evidence of the strengths of and the challenges faced by Big Noise delivery.

Method 3: Participatory filmmaking exercise (Raploch)

A filmmaker was commissioned to produce a film with six participants at Big Noise Raploch, aged between 12 and 14 years[10-14]. The purpose of the film was to broadly capture the lived experience of participating in the Big Noise, but the content of the film was determined by way of group discussion among those who took part. The participants were selected by staff at Big Noise Raploch, primarily based on their willingness to take part and the fact that they had consistently attended the programme over a number of years.

The filmmaker met with the participants on six occasions, when they would normally have been attending Big Noise after-school provision. The GCPH and Audit Scotland researchers (AC and LG) facilitated the session with the filmmaker. Over the course of six weeks, discussion evolved from basic understanding of filmmaking to a clear vision of what the participants wanted in the film and the approaches required in achieving this.

The participants identified the people they wanted to be interviewed as part of their documentary, stipulated the questions those interviewees would be asked, interviewed some of those who appeared in the film, contributed their own thoughts and feelings on camera and helped to shoot the film. AC and LG organised the filming sessions and AC, LG and the filmmaker interviewed some of those who appeared in the film. A final session gave participants an opportunity to see a cut of the film and provide their feedback on editing.

Table 3. Evaluation component 1, method 3: participatory filmmaking exercise (Raploch).

	Number	**Content**
Big Noise Raploch participants	Six programme participants (aged 12 to 14 years) **TOTAL: 6**	Filmmaking exercise and related discussion: - the lived experience of participation in the Big Noise

The discussions that took place between the participants during the filmmaking meetings were audio recorded on a portable digital device with the permission of all in attendance. The digital audio files were then transcribed by LG. The finalised film, including the views of those who appeared in the film, alongside these transcripts, constituted the data gathered in this exercise. Primary school-aged children, secondary school-aged children, parents and Big Noise staff were interviewed as part of the filmmaking process. The film and the transcripts were analysed using thematic analysis. Themes were identified by two analysts (AC and LG) working collaboratively and refined in light of the data gathered through other methods in this component of the evaluation.

Method 4: Case studies

Case studies were adopted in this evaluation to 'bring to life' emergent themes from the data gathered through other methods[15-17]. These case studies are intended to enhance understandings of participant experiences and provide context to the influences of Big Noise on children and young people. This might include, for example, the role of family dynamics and support in promoting sustained programme engagement. Participants were selected to represent a selection of those who were engaging well and not so well with the programme, as well as the contextual realities that influence engagement. 'Successful engagers' were broadly characterised as participants who have demonstrated a consistent level of programme attendance and who generally perform well and enjoy Big Noise classes. 'Intermediate engagers' were defined as participants who have had spells of reasonable Big Noise attendance but who also had periods of not attending; their performance and enjoyment of the programme being varied. 'Non-engagers' represented those who had access to in-school provision but who had not taken part in the orchestral programme.

Nine children were initially identified at Big Noise Govanhill and nine at Big Noise Raploch, each of whom fell into one of the three categories outlined above, with the assistance of Big Noise staff. A total of six case studies are presented in this report. The decision as to which case studies to include in the report was based on the illustrative power of the particular case study and the degree to which themes emerging from case study analyses were becoming repetitive. Case study data was gathered through: observation (evaluation component 1, method 5, detailed below) of Big Noise music tuition; interviews with participants; interviews with parents/guardians; interviews with Big Noise musicians; and interviews with school staff.

Engaging with parents in the case studies proved difficult in both sites, especially in Govanhill, where there were significant language and cultural barriers as well distrust among some of the newer migrant populations to the area[18]. As such, not all case studies have had input from the full complement of methods described above, although these were pursued to the fullest extent possible during data collection.

Table 4. Evaluation component 1, method 4: case studies.

	Number	**Content**
Big Noise participants, parents, musicians, school teachers	Case studies of 19 children, involving interviews with: 9 Big Noise staff 5 school staff 3 parents/guardians 2 children/young people **TOTAL: 19**	'Successful engagers', 'Intermediate engagers' and 'Non-engagers' were identified and case study methods described were used to explore: - Participant experience - Contextual influences on programme uptake and impacts

Interviews were audio recorded on a portable digital device with permission. The digital audio files were then transcribed verbatim by an external agency and returned in textual format. Observation of participants within music tuition was recorded using hand-written field notes which were subsequently typed up. The textual interview and observation data were the main sources of data for this method. Case study development took place over almost the full 18 months of this initial phase of the

evaluation. This included building in different perspectives (i.e. teacher, parent, and so on) and thus new layers of data on an individual participant basis.

A brief description of each case study was developed based on a synthesis of perspectives (within each case study) towards the end of the fieldwork phase in late 2014. The description of each individual case study and the themes within it were then considered to ensure that the stratification of programme engagement was represented. This was important in selecting which case studies were included in this report. Case studies were also selected to represent important process and impact themes emerging from the other methods and analyses. Importantly, in the case of 'non-engagers', some case studies are presented to make clear that in spite of the strengths of the Big Noise programme, engagement for some cannot be achieved. These case studies highlight the challenges that the pursuit of each of the overarching process learning themes present in delivery.

Method 5: Observation

Approximately 1,500 hours of observation took place across both Big Noise sites over the initial 18 month phase of this evaluation. Observation was structured across a variety of planning and delivery settings and events including Sistema Scotland Board meetings, Big Noise operational planning meetings, Big Noise programme delivery, the Sistema Scotland Teachers event and Big Noise concerts. Observation also included the researchers (AC and LG) being based within the Big Noise offices in Raploch and Govanhill respectively for the majority of the working week. Observation field notes were recorded throughout this first phase of the evaluation.

While these field notes were not analysed in their own right, observation served several purposes that contributed to the overall quality of this evaluation. First, observation generated questions to be explored in greater depth using the other methods described, such as interviews and case studies. Because these questions were based on real events and observed ways of working, they were more relevant and insightful than if developed 'at a distance'. Second, observation notes acted as an effective counterpoint to test emerging themes and the commonality and divergence of themes between programme sites and across staff groups. Third, observation notes were used as a timeline of important events and programme development over this phase of the evaluation and for planning the evaluation in such a way as to minimise disruption to the Big Noise programme delivery. Finally observation built a relationship between AC/LG and programme staff, promoting trust, respect and reciprocity, all of which serve as a foundation for an authentic evaluation dialogue.

Method 6: Focus group

A focus group was arranged which sought to explore the views of current Big Noise participants and non-participants. Youth Space staff supported AC in organising and conducting the focus group. Youth Space is a youth group held in the Raploch Community Campus by Stirling Council's Youth Services and offers a range of activities and support to the children and young people residing in Raploch. Nine girls aged between ten and 16 years old attended the focus group and all had prior notice that the discussion would focus on the Big Noise programme.

Five of the focus group attendees had been previously involved in the Big Noise programme and had since left, while the remaining four were still active participants within the Big Noise programme. The evening was organised and facilitated by the

regular youth worker and involved AC observing and taking notes while the discussion took place. Age-relevant materials and tools were employed to allow for open and broad discussion about the young people's lives and thoughts on the Big Noise programme. This included mind maps and other creative group activities.

The focus group covered:

- Current or previous participation in Big Noise.
- Length of time involved in Big Noise programme.
- Reasons for attending Youth Club.
- Level and nature of involvement in other activities.
- Words describing the Big Noise programme.
- Reasons why (stopped) attending Big Noise.
- Thoughts and feelings about Big Noise (positive and negative).

The focus group was not audio recorded but extensive note taking by AC along with a range of outputs and materials, which were directly populated by the participants, formed an accurate account of the meeting. The notes and materials were analysed thematically by two analysts (LG and AC) working collaboratively and refined in line with the themes that emerged from other methods of data collection in component 1 of this evaluation. Pictures of the focus group material are also presented in the report.

Method 7: Systematic literature reviews

An important first step in this evaluation process was to assess the current evidence concerning the impacts of participation in 'the arts' on health and wellbeing. With a particular focus on the evidence required to inform the evaluation of Sistema Scotland and the Big Noise programme, four distinct systematic literature review work packages (WP) were developed by the GCPH:

WP1: The impact of art attendance and participation on health and wellbeing.
WP2: 'Arts and smarts' – assessing the impact of arts participation on academic performance during the school years.
WP3: Community-based music programmes, and health and inequalities – the impact on children/adolescents and their families.
WP4: Narrative synthesis of WP1 to WP3.

The three systematic literature reviews and the narrative synthesis were commissioned in Spring 2014 and undertaken by a consortium led by the University of Dundee. The literature reviews and the narrative synthesis were published in October 2014 and are available on the GCPH website. The reviews inform the evaluation in two distinct ways. First, they assess the quality of evidence in each work package in order to highlight methods and studies which have yielded high-quality findings and significant results. This has informed the methods in this evaluation, especially the long-term quantitative participant outcome tracking (evaluation component 1, method 8 detailed below). Second, the systematic reviews are important to the development of the Big Noise logic models (evaluation component 1, method 8 detailed below), highlighting strengths and weaknesses in current evidence within the theorised programme pathways.

Method 8: Development of Big Noise logic models

A key output of this evaluation, which builds upon the first evaluation of Big Noise Raploch in 2011 (the 'GEN' report), is to develop a comprehensive understanding of the impacts of Big Noise on participants. This has involved the development of explicit logic models of how Big Noise, as a social intervention, contributes to a chain of intermediate results and finally to long-term impacts. These logic models identify individual elements of the programme, including how each of these are necessary to initiate the intermediate chain of results[19]. Three overarching logic models have been developed as a diagrammatic representation of the impacts of Big Noise on participants, their families and their communities. Specific pathways of interest within these overarching models have been extracted and are represented in the Findings section.

The development of logic models for the Big Noise programme has been informed by evaluation methods 1-7 within evaluation component 1. The process of developing the logic models has been iterative and progressive, where new evidence and insights gathered from the overall evaluation continually fed into the logic model, and the model and its pathways have been continually refined. Development of the logic models has been undertaken by AC and LC in discussion with CH. Evidence and insight from both Big Noise sites are represented within the logic models. These logic models have been discussed with Sistema Scotland and Big Noise staff, by way of workshops throughout 2014. This process was undertaken to ensure staff were confident in the models as an accurate representation of the Big Noise programme, including the impacts they described as part of their interviews with AC and LG (see C1, M1 above).

Method 9: Health and wellbeing survey (Govanhill)

NHS Greater Glasgow and Clyde conduct a health and wellbeing survey every three years. The aims of the survey are to provide intelligence to inform the health promotion directorate; to explore the different experience of health and wellbeing in the most deprived communities compared with other areas; and to provide information that would be useful for monitoring health promotion interventions. The survey fieldwork is undertaken by an external commissioned agency.

The GCPH has committed some of its core budget to boost the survey sample in Govanhill to a level from which comparisons with other geographies will be statistically significant; this means surveying some 533 Govanhill residents. The sample profile will also be representative of the Govanhill socio-demographic strata. Furthermore, the GCPH has been influential in adding questions which assess social capital within the survey. These are important questions in measuring the impact of the Big Noise Govanhill on the wider community. The boosted survey was conducted in Govanhill over summer/autumn 2014. The results summarised in the findings section represent a baseline for Govanhill which will be tracked every three years. Govanhill findings are presented in comparison with Glasgow as a whole.

Table 5. Health and wellbeing survey (Govanhill).

	Number	Content
Govanhill residents	533 individuals representative of the Govanhill socio-demographic strata **TOTAL: 533**	Range of validated (self-assessed) survey questions in relation to: - health - wellbeing - social capital

Method 10: Long-term quantitative data linkage

In keeping with the highest quality research in this field, this evaluation is approached and planned over the life-course of the children currently participating in the Big Noise programmes. The central approach to measuring programme impact is to link a series of routinely gathered outcome data for programme participants and compare these outcomes with a control group. The outcomes of interest are from education, health, social care and the welfare and justice system.

At the time of writing, the foundations for this analysis are well developed in both Glasgow and in Stirling. Ethical approvals are almost all in place and the development of data-sharing protocols with partner agencies in both Glasgow and Stirling are ongoing. There are concerns over access to justice and welfare system data due to the reforms and restructuring within these agencies. This will require consideration moving forward. Presently, some partners are unwilling to release data over concerns relating to consent, in particular the fact that the planned study does not seek consent from the control group. These factors mean that this report does not contain a baseline data linkage as detailed in the GCPH evaluation plan. This does not represent a substantial setback to this report as the Big Noise participants are too young at present to have recorded any noteworthy data within these agencies. However the issue of accessing multi-agency data for the purpose of linkage and tracking of outcome data is central to this overall evaluation and must be addressed.

Ethical requirements of the evaluation

This evaluation has required a range of ethical approvals, as well as data-sharing agreements and protocols. The ethical requirements for all of the data presented in this report have been approved. The ethical requirements are detailed in Table 6 below, along with the respective progress status at the time of writing.

Table 6. Ethical requirements of the evaluation.

Ethical/data-sharing requirements	Status
University of Glasgow Medical, Veterinary and Life Sciences ethics approval for methods 1-5 within evaluation component 1	Approved (April 2014)
NHS West of Scotland Research Ethics Committee approval for long-term data linkage required for method 9 in evaluation component 1	Approved (July 2014)
NHS Privacy Advisory Committee approval for long-term data linkage required for method 9 in evaluation component 1	Ongoing
Data-sharing protocols and local permissions/agreements (such as Caldicott Guardian approval for local health data) with partner agencies in Glasgow and Stirling	Ongoing

Evaluation component 2: Education Scotland, assessing quality of Big Noise Raploch education and learning

Education Scotland undertook a week-long review of the Big Noise Raploch in late September 2014. The purpose of the review was to assess the quality of educational and learning aspects of the Big Noise delivery and assess the impacts of the programme on participants, families and the wider community. Three overarching questions underpinned the review, these were:

- How well do Big Noise, Raploch participants learn and achieve?
- How well is Big Noise, Raploch increasing the life chances, promoting and securing wellbeing for children, young people and their families?
- How well does Big Noise, Raploch contribute to building a stronger, more resilient community?

The visit involved a team of six inspectors performing a range of primarily qualitative methods. More than a year of engagement between Education Scotland and Sistema Scotland preceded the visit in order to tailor and refine the evaluation methods to ensure they were suited to Big Noise delivery and the Raploch context. A self-evaluation was also prepared by the Big Noise team in advance of the visit; this enabled a structured focus for initial discussion and for scoping of review activities.

A central method in assessing the quality of education and impacts was observations of participants during in-class musicianship, Baby Noise and after-school

programme. Observations of programme participants took place outside of Big Noise delivery during normal schooling; this was done to assess the crossover impacts of Big Noise participation on mainstream education and classroom behaviours.

Focus groups were also conducted involving children and young people, parents, community partners, staff in primary and secondary schools and Big Noise staff teams. Individual interviews with headteachers and with Big Noise senior staff also took place as did focus groups with others working with the Raploch community. Analysis of paper-based evidence and data on attendance and achievement was also completed over the course of the visit.

The inspectors involved were from teams across Education Scotland with diverse expertise, bringing a range of relevant perspectives to the visit. The basis for the evaluation of the educational and learning quality of Big Noise lies in the professional experience, expertise and judgement of the inspectors involved in the visit. This assessment is in turn guided by the following quality improvement frameworks:

- The Child at the Centre (2007)
- How Good Is Our School? (2007)
- How Good Is Our Community Learning and Development? (2006)
- How Good Is Our Culture and Sport? (2012)

A ‘discussion of findings’ meeting took place at the end of the visit where the data gathered and views of the review team were synthesised and summarised. At the end of this meeting Big Noise senior staff and local authority partners were satisfied that their views and insights had been reflected in the key themes communicated by Education Scotland to parents, guardians, participants and Big Noise partners via the visit feedback letter presented in component 2 of the Results section.

Table 7 summarises the key methods and content used by Education Scotland in the September 2014 visit.

Table 7. Education Scotland, methods used in assessing quality of Big Noise Raploch education and learning.

	Methods	Content
Programme participants	- Observations of Baby Noise and nursery Big Noise sessions. Observations of Big Noise tutor-led musicianship lessons with primary school and special school classes during the school day. - Observations of Big Noise after-school programme and the adult orchestra. - Observations of Big Noise participants working in secondary school classes across the curriculum. - Observation of a range of operational meetings. - Observation of "Take a Musician home for tea" session. - Focus groups of children and young people from P1-S4.	How well do Big Noise, Raploch participants learn and achieve? Assessment of educational and learning quality and programme impacts.
Parents/guardians	- Focus group of parents. - Informal discussions with parents as they arrived to collect children and with helpers and parents at Baby Noise.	How well does Big Noise, Raploch contribute to building a stronger more resilient community? Assessment of programme impacts.
Community organisations	- Meeting with other community organisations based in the Raploch community. - Telephone interviews with representatives of other community groups.	How well does Big Noise, Raploch contribute to building a stronger more resilient community? Assessment of programme impacts.
Big Noise partners	- Telephone conversations with CEO of National Youth Orchestra of Scotland and with members of Sistema Scotland Board. - Meeting with headteachers and staff in each of the schools partnered with Big Noise. - Informal discussion with manager of Playview after-school care who share the campus.	How well does Big Noise, Raploch contribute to building a stronger more resilient community? Assessment of programme impacts.

Evaluation component 3: Glasgow Caledonian University, cost-benefit analysis of Big Noise Govanhill

For technical detail relating to this component, please see Appendix D.

Background

Glasgow Caledonian University (GCU) was asked by the GCPH to conduct an economic evaluation of Sistema Scotland's Big Noise programme. Given the significant differences between the current project sites it was agreed to focus specifically upon the Big Noise project in Govanhill.

Conducted during 2014, the practical feasibility of applying an economic perspective to a complex social intervention was tested, using a cost-benefit analysis (CBA) methodology, and the results are reported in this chapter. The economic evaluation sought to estimate the resource implications (expressed as costs) of Big Noise Govanhill as an upstream intervention and link net resource implications to outcomes achieved in aiding judgement about the overall 'value' of the project. From an economic perspective, the gains claimed for the programme (specifically: using musicianship and engagement in an orchestra to foster confidence, discipline, teamwork, pride and aspiration in the children taking part, their families and across their wider community) are of a public goods nature and the outcomes are health generators, generally evidenced through public health related measures.

The premise of economic evaluation is to capture everything of value and so a 'balance sheet' with all the major outcomes, by benefit or cost, was created with valuation of each outcome in a common unit. In the case of CBA this unit is monetary value (£). This differs from the usual approach in health economics which often uses cost-effectiveness analysis based upon Quality Adjusted Life Years (QALYs). Using monetary values as a common metric in CBA enabled different outcomes to be included and shadow prices[a] were used to capture the flows of values such as the utility that is gained from participating in Big Noise. These economic values (costs and benefits) although monetised are not indicative of cash or potential cash release but is a method to enable the measurement of flows of value (whether a cost or a benefit) in a commensurate 'unit of account'. Monetising flows of value is an inexact art but this provides at least an attempt to capture a more holistic sense of the worth of Big Noise.

CBA in a public health context

Upstream public health interventions are more about improving people's life circumstances and environments than about providing individualised prevention services. Public health interventions are therefore aimed at prevention with long-term perspectives on reducing health inequalities. This long-term focus has implications for time horizon (known as inter-temporal effects) and distributional weighting[b] in economic evaluation.

Inter-temporal effects have an influence because it is important to provide enough time

[a] Shadow prices reflect "the opportunity cost to society of participating in some form of economic activity. It is applied in circumstances where actual prices cannot be charged, or where prices do not reflect the true scarcity value of a good. " [source: HM Treasury Green Book, p105 - Glossary]

[b] Distributional weighting is the adjustment of the monetary value placed to take into account other welfare-relevant factors such as income, health, environment, life expectancy and so on.

for outcomes to manifest. This presents a challenge to assessing and measuring the benefit to children and families given the timescales for many of the outcomes are predicted to be medium to long term. It is also the case that the pattern of costs and benefits is affected by the time value of money because the choice of money today and the same money tomorrow are not an equal choice. Discounting costs and benefits occurring in the future is likely to make prevention programmes less attractive given most benefits will be in the future. For Big Noise Govanhill this is pertinent because longitudinal impacts from involvement are deemed to be the key outcomes and are likely to be revealed in future years rather than in the short term. Sistema Scotland argue that by building young children's resilience, developing their self-esteem, life skills, the discipline of playing together as a team, through offering children from an early age the opportunity of success and achievement, encouraging their ambition and life chances, and broadening their horizons, their proactive approach can achieve positive change. However this may take a generation.

Given these challenges, a conservative approach to determining the possible magnitude of impacts was adopted. For example, it was presumed that successful realisation of benefits may result in an uplift from an average statistic for Govanhill (when available, for Glasgow if not available) to the Scotland average. Key social and economic data for Scotland and Glasgow (and Govanhill when available) are provided in Table 8.

Table 8. Social and economic data – Scotland, Glasgow, Govanhill.

		Govanhill	**Glasgow**	**Scotland**
Population (NRS 2011 Census[20])		14,412	593,245	5.2 million
Life expectancy at birth (years) (ISD Scotland[21])	Male	71.4	72.3	76.9
	Female	78.1	78.2	80.9
Healthy life expectancy at birth (years) (ISD Scotland[21])	Male	*ND*	51.5	59.5
	Female	*ND*	60.8	61.9
Employment deprivation (SIMD 2012[22])		22.1%	19.2%	12.8%
Income deprivation (SIMD 2012[22])		24.5%	21.4%	13.4%
Total crimes recorded by police (Scottish Government 2013[23])		*ND*	53,212	273,053
Crimes of violence		*ND*	*1,763*	*7,530*
Sexual offences		*ND*	*1,452*	*7,693*
Crimes of dishonesty		*ND*	*26,011*	*135,889*
Vandalism		*ND*	*8,882*	*59,479*
Other crimes		*ND*	*15,104*	*62,452*
SIMD crime and offences (recorded by the police) 2010-2011[24]		746	ND	ND

Methodology

A cost-benefit analysis (CBA) methodology was used to consider whether the costs of Big Noise Govanhill would be greater or lesser in magnitude than the potential benefits that the project is predicted to deliver, from a societal perspective, to establish whether the project can increase social welfare. This accords with the application of a CBA methodology to estimate the social impact of *El Sistema* in Venezuela, in 2007, by the Inter-American Development Bank[c].

The economic analysis has drawn upon several main sources as follows: a literature review of economic evaluations of arts-based programmes designed to improve health and wellbeing (see Appendix D for summary); financial data provided by Sistema Scotland about Big Noise Govanhill; and the Big Noise logic model developed by the GCPH which captures the potential variables of interest (the anticipated outcomes) at three levels – children, families and communities. Primary data was not collected for the study. Benefits were monetised using a benefits transfer approach.

Excluded from the evaluation were impacts such as welfare costs (e.g. unemployment benefits) because these are transfer costs that redistribute the wealth of society (in the UK through government taxation and transfer arrangements) and are traditionally not included in CBAs.

Economic model assumptions

The economic model assumptions are shown in Table 9.

Table 9. CBA – Big Noise Govanhill: economic model assumptions.

Methodology	Cost-benefit analysis
Perspective	Societal
Counterfactual	'Do nothing' scenario, i.e. the project ceases to exist and no other investment is made in its place (see Appendix D for further detail)
Common metric	GBP 2013 prices.
Timescale	Baseline 0-15 years (max school involvement) with sensitivity analysis at: 0-6 years (budgetary forecast period) 0-9 years (full nursery plus primary school involvement) 0-70 years (predicted lifetime effects).
Discount rate	HM Treasury Green Book guidance (2011) for society's rate of time preference (3.5% for years 0-30, 3.0% for years 31-75). The CBA assumed zero inflation and used a real interest rate so all benefit and cost flows are in real adjusted terms.
Participation	Assumed participation rate of 100% for in-school provision, 50% continuing at conversion into after-school provision (i.e. P3) and thereafter 90% continuing from year to year through each stage. Assumed continuous involvement for a child (in reality they may drop out and then choose to return later).
Sensitivity analyses	Timescale, participation rates, costs, benefits.

[c] Inter-American Development Bank. Paper for Board of Executive Directors titled "Venezuela. Proposal for a loan to support the Centro de Acción Social por la Música, Phase II", dated 22 May 2007.

Standard cost-benefit analysis appraisal indicators were calculated in Microsoft Excel, specifically NPV (net present value) and BCR (benefit-cost ratio). (See Technical Appendix for details).

The critical focus of CBA is on the net present value (NPV) of a project because this indicates the value of the investment: projects with a positive NPV increase net worth, while projects with a negative NPV do not increase net worth. Projects with NPV=0 leave net worth unchanged. NPV is estimated by setting out the stream of potential benefits of the project and considering these in light of the predicted costs. To this end all predicted costs, including estimates of reductions in future 'reactive' social costs (e.g. cost of crime and justice) are netted out before being compared with the flows of value of benefits. This can affect the benefit-cost ratio (BCR) – an indicator of overall value for money – particularly as a negative BCR can be misleading depending on whether the negative is a result of the numerator or the denominator. As such, although this study reports BCRs, caution is noted in interpretation.

Participation assumptions

Big Noise Govanhill's yearly cycle is from July to June. In-school provision (involving all children in each of the year groups involved) is planned for nursery (age 3) to Primary 2 (age 6). Thereafter children can choose to opt-in to the after-school orchestra. Numbers of children fluctuate throughout the school year and an estimate[25,d] using 2013 pupil census data and forecasting by Sistema Scotland suggests that there could be between 550 and 600 children involved with in-school delivery, and that each year there could be around 160 to 220 children at each primary school class stage.

Costs and benefits

Details of the assumptions underpinning calculations for economic costs and predicted benefits can be found in Appendix D.

Identification of costs

Costs were identified using a combination of identified financial costs from Big Noise Govanhill budgetary accounts[e] and discussion with the GCPH about the project operations in order to highlight areas of economic cost.

The main costs (2013 prices) examined in the analysis include:

- budgetary costs which are capital or recurrent (operational)
- estimated economic costs for in-kind donations capital or labour. The underlying principle is the concept of opportunity cost.

Eight cost categories (comprising four financial costs plus three economic costs (office/accommodation, volunteer and direct school, and one 'avoided costs' as forecast project outcome) were identified. All costs are annualised. Financial costs were derived from Sistema Scotland's Govanhill budgetary forecasts. Economic costs for schools (opportunity cost of resource use, and so on) were based on discussion with the GCPH, specifically zero for baseline analysis with other

[d] 2014-2015 Forecast data *(in italics)* provided by GCPH and Sistema Scotland, May 2014.
[e] "Big Noise Govanhill budget 2013-2014", supplied to GCU by GCPH in May 2014, and "Govanhill Expenditure Budget 2014/15" (including forecasts for 2015-2018), supplied to GCU by Sistema Scotland in December 2014.

assumptions explored at sensitivity analysis.

Table 10 shows the key financial categories of spend and indicates the percentage of funding resources (approximate range) that are forecast to be required.

Table 10. Financial categories (%)[f].

	Forecast spend 2013-2014 to 2017-2018
Staff and freelance costs	70% to 73%
Direct programme costs	9% to 11%
Instruments	5% to 6%
Other overheads	7% to 9%
Development and training	2% to 7%
Fundraising, marketing & evaluation	1%
Total budget forecast	100%

Predicted annual costs are principally driven by human resources: staff & freelance costs and development & training costs together comprise approximately 75% of the budget, year-on-year. This reflects the intensive labour demand of the project as well as highlighting the high, fixed costs of delivery. Staffing is predicted to level out at a headcount of 25 (comprising 18 musicians, five support staff and two administrative staff – 18.1 FTE equivalent) by 2017-2018[21] – by which point the oldest children involved will be in Primary 7 and so the full range of nursery and primary school children in the Govanhill community could potentially be involved. Purchase and maintenance/repair of musical instruments constitutes around 5% of forecast financial direct programme costs. This is forecast to remain reasonably steady across years although it is anticipated that there would be a change in how money is spent – for example, the current experience at Big Noise Raploch is that spending has moved towards spending less on instruments for younger children and more for older children who need larger instruments, and possibly better instruments. Consideration was given to the (estimated) economic value of instruments that have been donated. However the numbers are small, the condition of donated instruments usually has implications for repair costs, and donated instruments are often for the use of Sistema Scotland generally rather than specifically for Big Noise Govanhill. It was decided to set the value at zero due to these factors.

Details of baseline costs are outlined in Table 11.

Identification of benefits

Benefits were identified using the Big Logic Model for Sistema Scotland, tracking through potential pathways of impact to social outcomes. Values were placed using benefit transfer (see Table 11 below, and Appendix D for further details). Secondary benefits that were identified have been excluded from the CBA analysis to avoid double counting.

The main benefits (2013 prices) examined in the analysis include:

- gains, financial or otherwise, to society
- positive impacts on welfare or wellbeing of groups and individuals.

[f] Source: Govanhill expenditure budget forecast, provided by Sistema Scotland (December 2014).

Three monetised benefit categories (income / education / health and wellbeing) and a fourth category ‘society’, were identified using the Big Logic Model, discussion with the GCPH and consideration of relevant academic literature. The fourth category ‘society’ had benefit noted but not monetised, with predicted ‘avoided costs’ accounted for at C8. All benefits have been forecast (prediction due to unavoidable absence of evidence of impact of intervention) and values identified using a benefits transfer approach (drawing on wider research to identify reasonable values).

Sensitivity analysis

Sensitivity analysis is a key part of CBA which enables testing of assumptions to understand the impact of a range of probable values on present value (PV) and to consider the impact of risk. It is important when there is a high degree of uncertainty about values as with the current study. Table 11 outlines the sensitivity analyses conducted.

Table 11. Data categories including baseline and sensitivity analysis values.

	Project data	Basis of value calculations	Baseline assumption values	Alternative values used during sensitivity analysis
Costs				
C1	Capital costs	Sunk cost	0	n/a
C2	Office and related accommodation (in-kind)	Economic value of in-kind donation	£40,000	Nil
C3	Operating costs	Financial costs	£860,000	All financial costs together [C2+C3+C4+C5] total £1 million per annum
C4	Volunteer costs	Economic value of in-kind donation of time + financial cost of expenses paid	24 volunteers (from budget forecast) * 2.8 hours (national average time spent volunteering per week) * £6.31 (UK National Minimum Wage 2013) + £2,000 pa	Nil
C5	Translating costs	Financial costs	£3,000	Nil
C6	Direct school costs	Economic value of in-kind donation of spaces and staff time	£0	£21,000 per annum
C7	Project close-down costs	Financial costs assumed equal to value of residual assets	£0	Nil
C8	Society	Reduction in estimated expenditure by public services due to avoided anti-social behaviour +	£20,742 pa * number of participants * 0.11 (% of children estimated to develop persistent life-course conduct problems)	(1) replace social work estimates with annual figure of £3 million (2) add avoided costs of offending for 1 in every 700 children involved in

	Project data	Basis of value calculations	Baseline assumption values	Alternative values used during sensitivity analysis
		reduction in estimated expenditure by social work services in the community as a result of better engagement	+ £1,299 pa * number of participants * 0.11 (% of children estimated to develop persistent life-course conduct problems)	Big Noise Govanhill (lifetime cost of a young offender £300,000).
Benefits				
B1	Income	Charitable donation + utility of concert goers	As per Charities Scotland Register + 2 performance pa * 250 attending * £6.53 (2013 prices)	Nil
B2	Education	Positive destinations (life-course trajectory – realised if involved P3 to S6)	£4,702 pa (average annual wage gain over lifetime by qualification level (National Minimum Wage to GCSE equivalent) * 0.054 (% uplift from (proxy) Govanhill to Scotland average for school leavers positive destinations)	(1) £18,340pa (NMW to Graduate) (2) threshold impact – benefit realised if participation is from P3 to S2.
B3	Society	valuation of perception of living in a community: with a Big Noise project; with predicted benefits of lowering incidence of antisocial behaviour and lower crime; with improved community relations	Not quantifiable.	Nil.

	Project data	Basis of value calculations	Baseline assumption values	Alternative values used during sensitivity analysis
B4	Health and wellbeing	Utility of participants For timescale 0-70 years: (1) 4.15 QALY * number of participants involved until end S6 (discounted – payable age 60, so project year 55 on)	£1,500 * number of participants £30,000 per QALY	(2) zero QALY (3) threshold impact – QALY realised if participation is from P3 to S2.

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