University of the West of England

The effectiveness and cost effectiveness of health appraisal processes currently in use to address health and wellbeing during plan appraisal

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List of abbreviations

Abbreviation	Meaning
EIA	Environmental impact assessment
EqIA	Equality impact assessment
HIA	Health impact assessment
IA	Integrated appraisal
IIA	Integrated impact assessment
SA	Sustainability appraisal
SEA	Strategic environmental assessment
SIA	Social impact assessment

Glossary of terms

Term	Definition
Appraisal	Formal processes of assessing plans or projects for their potential positive and negative impacts (e.g. EIA, HIA).
Environmental Impact Assessment	A systematic process to identify, predict and evaluate the environmental effects of proposed actions in order to aid decision making regarding the significant environmental consequences of projects, developments and programmes[1].
Environmental health issues	As considered in appraisal processes (EIA, SEA etc) including for example, air and water quality, noise, odour, contamination
Equality Impact Assessment	A process for identifying the potential impact of a project or land use policy, service and function on a population to ensure it reflects the needs of the whole community and minimise the potential for discrimination.
Health	A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.
Health Impact Assessment	A combination of procedures, methods, and tools by which a policy, program or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population. HIA identifies appropriate actions to manage those effects.
Integrated appraisal	The combination of any of the following appraisal processes: environmental impact assessment, social impact assessment, health impact assessment, equality impact appraisal.
Plan	Spatial plan relating to a whole region, city, town or neighbourhood. It can include topic plans (e.g. for transport, housing and air quality).
Project	Specific development proposals requiring determination through a land use (spatial) planning process.
Social Impact Assessment	A methodology to review the social effects of infrastructure projects and other development interventions.
Spatial planning	A process intended to promote sustainable development and is defined as 'going beyond' traditional land use planning to bring together and integrate policies for the development and use of land with other policies and programmes which influence the nature of places and how they function.

[1] Gothenburg Consensus definition added to by the IAIA (Quigley et al 2006)

Strategic Environmental Assessment	Strategic environmental assessment is required by European and UK law and has been adopted as an appraisal process in many countries across the world. It is a way of systematically identifying and evaluating the impacts that a plan is likely to have on the environment. The aim is to provide information, in the form of an Environmental Report that can be used to enable decision makers to take account of the environment and minimise the risk of the plan causing significant environmental damage. UK government guidance advises that where a plan requires both strategic environmental assessment and sustainability appraisal, that the former process should be integrated into the latter one.
Sustainability Appraisal	The term sustainability appraisal is normally applied to plans rather than projects, and in the UK is a required part of plan making, including social, economic and environmental criteria, and explicitly including SEA (see above). It is not legally required for project appraisal but many UK local authorities request that some form of sustainability appraisal accompanies major applications.
Sustainable development	Is development that meets the needs of the present generation without compromising the needs of future generations (Brundtland, 1987)

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Summary

Introduction

This summary is divided into two main sections, the first dealing with the UK; the second with other high income countries. There is no evidence available for medium-low income countries.

The categories used for the UK and other countries reflect varying practice. In the European Union SEA is required to be applied to all plans, programmes and policies by EU Directive 2001/42/EC. In the UK SEA is incorporated into SA and should therefore encompass social/health and economic issues as well as environmental. However to retain consistency with the approach taken to the evidence base on project appraisal, the UK and non-UK studies have been considered separately. Outside the EU some countries have adopted SEA practice, or some strategic form of EIA. Health Impact Assessment has a non-statutory but reasonably standardised approach across high income countries.

Appraisal of plans in the UK

SA/SEA

There is a conspicuous lack of evidence of evaluations in this critical area. There is only one citation, with three case studies evaluated (one Local Transport Plan and two development plan documents) (Fischer, 2009 [+]). In terms of process, there is a statutory requirement that health is assessed in the SA/SEA process, although only one of these three case studies actually reported whether health issues were incorporated and indicated no evidence of inclusion. Neither was there evidence that health-related recommendations were incorporated into the adopted plan documents, and there is no information given about implementation. Physical activity, environmental health and unintentional injury were identified in all three case studies, but none of the three case studies gives evidence that mental well-being was included. The Local Transport Plan went beyond statutory requirements and included consideration of accessibility which has the potential to reduce health inequalities. The case studies are highly applicable to the UK and the current spatial

planning system, however it is important to recognise that as only three case studies were identified, these examples may not be representative of SA/SEA practice in the UK.

HIA

There are seven citations reporting eleven case studies, albeit four case studies use the same two plans (the London Transport Strategy (Douglas, 2001 & Douglas 2007) and the Edinburgh Transport Strategy (Douglas 2007 & Mindell 2004) reported in three different citations, but by two different authors. All but one citation (Douglas, 2007 [++]) provides moderate quality evidence (Douglas, 2001 [+]; France, 2004 [+]; Glasgow Centre for Population Health, 2007 [+]; Greig, 2004 [+]; Mindell, 2004 [+]; Wismar, 2007 [+]). Extra weight cannot be given to the evidence supplied by the two Edinburgh case studies as one of the co-authors, Dr Margaret Douglas, was involved with preparation of the the HIA. Transport plans/strategies were over-represented, in seven out of the eleven case studies.

In terms of process, only one case study reported HIA effectiveness in terms of completion of all stages from health recommendations, to implementation and post adoption evaluation (M1 Corridor Study - Greig, 2004 [+]). Those involved felt the process was useful, indeed successful, in improving the plans, and (in some cases) empowering local communities and environmental interests. Keys to success were seeing the HIA as part of an iterative process throughout plan preparation, and the active involvement of planners with health and other professionals.

All four identified health issues were considered in the case studies, but as may be expected because of the number of transport plans, environmental health issues figured greatly (e.g. air quality, noise). In terms of other health issues, equality was addressed in transport and healthcare facility provision, and in the physical environment.

These citations provide directly applicable evidence of the potential for HIA to influence the range of plans in the UK. HIAs use in informing SA/SEA, or SA/SEA processes should be invaluable.

Other forms of appraisal

Two citations provide two case studies (an Equality Impact Assessment of a supplementary planning document (PAS 2008 [+]) and an Integrated Impact Assessment of a strategic level spatial development plan (Plant 2007 [+])) and therefore the evidence is limited. In terms of process, whilst both case studies considered health issues and made recommendations that were incorporated into the plans, only Plant (2007 [+]) reports on evidence of implementation, albeit somewhat limited in scope, merely relating to a best practice guide. Neither study reports evidence of policies being evaluated post- adoption. Both case studies appraised a wide range of health issues, including physical activity. The EqIA appraised all except environmental health issues, and the IIA is reported as only appraising physical activity and 'other' health issues (including access to green space, climate change and public transport provision and management). The case studies are directly applicable to the UK and the current spatial planning system however, it is important to recognise that as only two case studies were identified, these examples may not be representative of 'other' appraisal practice in the UK. Both highlight the potential benefits of extending or perhaps redesigning the usual appraisal processes of SA/SEA.

Appraisal of plans in non-UK high income countries

SEA

There are three citations (Fischer, 2009 [+]; Kørnøv, 2009 [+]; Ng, 2005 [+]), all from the last six years, reporting five specific case studies in Germany, the Netherlands and Hong Kong and more generally on 100 studies in Denmark. There is strong evidence from all five case studies, that health is considered in SEA, but no evidence that the SEA health recommendations had been implemented at post-adoption stage. One author (Ng, 2005 [+]), notes that the level of influence was limited because the application of SEA was made too late in the planning process and Fischer (2009 [+]) attempts to find a link between the assessment and health outcomes, by making the general point that as the EU Directive requires that decision-makers should take the overall results of the assessment into account it was "probable" that health considerations had an impact. The range of health issues

considered in the case studies varied, although none referred to mental wellbeing. Most of the European studies considered issues of physical activity, environmental health and unintentional injury, whilst the Hong Kong studies concentrated on environmental health issues. The European case studies are directly applicable to the UK spatial planning context, with the Hong Kong studies only partially so, in view of population concentration and governance.

HIA

There are nine citations reporting 11 case studies in four countries – the USA, Australia, New Zealand and the Netherlands (Corburn, 2007 [+]; Dannenberg, 2008 [+]; Farhang, 2008 [+]; Gow, 2007 [+]; Mathias, 2009 [+]; Neville 2005 [+]; Tennant, 2007 [+]; Stevenson, 2007 [+]; Wismar, 2007 [+]. The 11 case studies relate to land-use plans, urban development strategies, a transport strategy and a forest management plan with land use issues. Five of the citations deal with just two of the case studies (San Francisco rezoning plan in three citations and Greater Christchurch Urban Development Strategy in two). Extra weight cannot be given to the evidence supplied by the San Francisco case studies as Rajiv Bhatia is co-author in all three citations and was involved with the HIA preparation. In the two Christchurch case studies, the co-authors, whilst not the same individuals, were employed by the local public health board involved in supporting the HIA. All citations are from the most recent decade. All nine citations provide moderate quality evidence [+].

The evidence suggests that the HIAs generally influenced the plan. The degree of that influence is varied, even contested, with some analysts suggesting it is more often through raised health awareness of the decision-makers than directly as a result of the assessment. For instance, in the case of the rezoning of eastern neighbourhoods in San Francisco, the HIA has led to a more inclusive decision-making process with a community based monitoring tool, although this did not directly influence the plan,. However, in all cases, there is no evidence that health recommendations were carried through in the implementation of the strategies or plans and no evidence of post adoption evaluation. All the four health issues were considered. The case studies mostly dealt with a wide range of health issues – some

explicitly with health inequalities. In contrast to the UK assessments, all explored physical activity.

All studies were directly applicable to the UK population and setting as they refer to case studies in the USA, the Netherlands, Australia and New Zealand, i.e. countries with similar high income and urbanised contexts.

Other types of assessment

Two citations reporting on three varied case studies were identified (Dannenberg, 2008 [+] and Wismar, 2007 [+]). A Finnish case study combines HIA and SIA. Two case studies from the USA are based on EIA – one in combination with HIA. The evidence on other appraisal types outside the UK is therefore limited. In terms of process whilst health issues were influential in preparing the plans, there is no evidence from the two citations of effectiveness in implementation, nor of any post plan evaluation. All raised health issues, though none with the full range, and no common pattern. Two of the three case studies are directly applicable to the UK in terms of population and of setting as they refer to urban case studies in countries with similar high incomes to the UK.

1. Introduction

This is the second of a series of seven reports to NICE concerned with the degree to which the spatial planning system incorporates health and well-being effectively in its processes. Report 1 examined how projects (concerned with land use) are appraised as part of the planning process. It examines how far and in what ways the statutory and non-statutory appraisal of projects account for potential positive and negative impacts on health and the social and environmental determinants of health, and what lessons emerge from current practices. Report 2 examines the same issues, but looks specifically at plan appraisal. It looks at the appraisal of spatial plan-making, including geographical areas or functions (for example transportation), and how health objectives and issues are considered. The two reports will feed into further review work, which will take into account a wider range of evidence from a number of sources, aiming to provide a basis for NICE guidance.

Plans are here defined as spatial or land use plans relating to a whole region, city, town or neighbourhood. They can include topic plans (e.g. for transport, housing and air quality). Appraisal refers to those types of evaluations that are commonly used to aid decision making in the planning process.

At the plan level the principal statutory tools are Sustainability Appraisal (SA) which usually incorporates Strategic Environmental Assessment (SEA). An important non-statutory tool is Health Impact Assessment (HIA), sometimes contributing to (or incorporated into) SA/SEA or where the health authority has a particular concern about potential impacts and so uses HIA to inform its comments to consultation on a draft plan. It is possible on occasion for SA/SEA and HIA to be undertaken for the same proposal, or more rarely as an Integrated Appraisal (IA) or Integrated Impact Assessment (IIA). Additionally, health impacts can be analysed in Social Impact Assessment (SIA) and impacts on equality by Equality Impact Appraisal (EqIA).

All countries in the European Union must apply European Directive 2001/42/EC (the SEA Directive). This requires an “assessment of the effects of certain plans and programmes on the environment” which in effect requires a formal environmental assessment of certain plans and programmes which are likely to have significant

effects on the environment. This assessment must include an assessment of the effects on the human population. Authorities which prepare and/or adopt such a plan or programme must prepare a report on its likely significant environmental effects, consult environmental authorities and the public, and take the report and the results of the consultation into account during the preparation process and before the plan or programme is adopted. They must also make information available on the plan or programme as adopted and how the environmental assessment was taken into account. The SEA Directive is transposed into United Kingdom law by the adoption of an act or regulations by each of the home countries.

SA/SEA is prevalent in most high income countries, but its use in middle/low income countries is a relatively new concept and so is patchy. The World Bank is leading by example in these countries, promoting SEA pilots in its East Asia and Pacific Region.

Equality Impact Assessment (EqIA) is now a requirement in England on all aspects of local government, including its spatial plans.

Note that this report does not deal with non-land use planning/non-spatial plans, for example a sustainable community strategy or housing strategy, nor does it identify examples of good practice with respect to appraisal / assessment, or the framework for such.

The assessment techniques relevant to this study conventionally deal with health to different degrees. HIA of course has health as its raison d'etre. SA/SEA should, if properly undertaken, include consideration of all the main environmental determinants of health.

The review is based on the available literature, accessed through systematic search of databases and website searches. The review has not involved carrying out primary research. The literature is subject to critical evaluation as to quality. The key points from papers and reports that satisfy quality criteria are systematically recorded as the basis for the subsequent synthesis of the evidence. The review has considered primary research and case studies; a number of systematic reviews and overviews have been identified and these will be considered separately.

The study starts from the assumption that development plans are likely to result in changes to the built environment that are then likely to influence health in a number of ways. This will be primarily through changes in the patterns of determinants of health, which are then associated with changes in health outcomes. It is often difficult to examine health outcomes per se, hence measures of determinants of health such as are used as proxy measures. For the purposes of this evaluation, four health issues were uppermost in the evaluation: physical activity, mental health and well being (including consideration of social networks), environmental health factors (air quality, noise pollution) and unintentional injury. If other specified potential impacts (such as employment) were described these were noted. In addition a further factor was considered, that of knowledge and skills of planners of the importance of health issues.

It is vital to recognise that in the UK, the appraisal of plans is only one element at the very beginning of the land use planning decision-making process. Appraisal is intended, in good practice guidelines, to be an aid to good decision-making at every stage of a plan's (or project's) evolution. So this research assesses the evidence of appraisal health impact at four stages of the plan making process: initial agenda-setting and scoping; substantive policy or proposal; implementation; and later assessment of actual impact.

1.3 Review questions

The review was designed to identify evidence to address the following research questions:

Appraisal approaches

Q1 How effective are approaches to appraisal in terms of influencing planning decisions at the plan level to secure improvements in health and address health inequalities?

Q2 What lessons can be learnt from other countries about the effectiveness of the above approaches?

Equity

Q3 What is the evidence that health equity issues are effectively considered as part of the appraisal of spatial planning decision-making processes?

2. Methods

2.1 Objectives

To locate, review and synthesise studies of the effectiveness and cost effectiveness of health appraisal processes currently in use to address health and wellbeing during plan appraisal.

Health appraisal processes included:

- Health impact assessment
- Strategic environmental assessment
- Social impact assessment or appraisal
- Integrated assessment or appraisal
- Equity impact assessment or appraisal
- Equality impact assessment or appraisal
- Sustainability appraisal.

Four process outcomes were considered important. The report assesses whether there is evidence that:

- Health criteria were included in appraisal
- Health-related recommendations were incorporated into the plan
- Health-related recommendations were implemented[2]
- Post plan adoption health outcomes were evaluated.

It is recognised that changes in the built environment may lead to changes in the patterns of determinants of health, which may then be associated with changes in health outcomes. It is often difficult to examine health outcomes per se, hence measures of determinants of health such as are used as proxy measures. Thus measures of environmental quality of air and noise are considered, as are indicators

[2] For the purposes of R2, evidence of implementation of recommendations was considered to include the inclusion of health related recommendations into appropriate local guidance that was framed by the relevant spatial plan.

of physical activity. Similarly, social networks are used as determinants of mental health and well being. Because of the difficulty of separating determinants of health from outcomes, a decision was taken for the purposes of this review, to identify four primary health issues of interest:

- Physical activity
- Mental health and well being (including consideration of social networks)
- Environmental health factors (for example, air quality, noise pollution)
- Unintentional injury.

If other specified potential health impacts (such as employment) were described these were noted.

In addition a further factor was considered:

- Knowledge and skills of planners of the importance of health issues.

2.2 Search Protocol

A search protocol was developed and agreed with the NICE project team to establish the process for conducting the search for evidence (Appendix A). The search undertaken was systematic, and used a single search strategy to identify evidence for both Review 1 (Project appraisal) and Review 2 (Plan appraisal). Citations meeting the inclusion criteria for Reviews 1 and 2 were differentiated during the screening of titles and abstracts or full texts, facilitated through the use of a checklist screening tool (see Appendix A: Protocol – 'use of a screening tool' and Appendix D).

2.2.1 Inclusion criteria

1. Population
    - The human population affected by the proposed project

2. Intervention
    - The appraisal or assessment undertaken as part of a regulatory process to examine the impact of the proposed project.
    - Technologies and tools to conduct such appraisals include but are not limited to; Strategic Environmental Assessment (SEA), Sustainability Appraisal (SA), Environmental Impact Assessment (EIA), Health Impact Assessment (HIA), Sustainability Impact Assessment (SIA), Integrated Appraisal, Social Impact Assessment (SIA), Equity Impact Assessment, Inequality Impact Assessment.
    - Projects may also be referred to using a variety of other terms including, but not limited to, developments, strategies or frameworks.

3. Comparison
    - The study / report includes an objective evaluation of the intervention in time or in setting

4. Outcomes

One or more of the following outcomes was evaluated:

- Health issues (including health equity issues) were considered in the appraisal / assessment process
- Specific recommendations about health outcomes were included following appraisal / assessment
- Health / equity recommendations were acted upon / implemented following the assessment / appraisal process
- Health issues / equity were discussed as part of participation and engagement of communities / populations / stakeholders
- Evidence of consideration of the following issues was sought:
    - Levels of physical activity?
    - Mental health and wellbeing (including social networks)?
    - Environmental outcomes affecting health (including air quality, water quality, noise pollution & contaminated land)
    - Unintentional injury
    - Specified health issue (including employment)

- Knowledge and skills of planners of the importance of health outcomes

2.2.2 Exclusion criteria

1. Time period
    - Studies conducted before the publication of the Brundtland Report: Our Common Future, by the World Commission on Environment and Development (1987) were excluded

2. Language
    - No language restrictions were applied when conducting electronic database searches. This was because of known good practice in other countries (principally European and Scandinavian countries) that may not have been published in English. In order to competently consider lessons learnt from other countries it was considered necessary to search for such evidence even if time restrictions may have prevented inclusion in the final report.

2.3 Search strategy

The search strategy to identify evidence from electronic databases was developed in an iterative manner to explore the concept areas of assessment / appraisal processes, project or plan initiatives and health outcomes. The search strategy was primarily sensitive (to include potentially relevant information) rather than specific (to exclude irrelevant material) due to the limited use of indexing and coding terms for the subject areas of spatial planning and assessment / appraisal within electronic databases. Initial scoping of electronic databases suggested that Embase contained more relevant indexing terms than Medline, and therefore Embase was used to develop the initial search strategy that was subsequently adapted for the other databases. Search strategies used for databases are listed in Appendix B.

2.3.1 Electronic databases searched

Following development of the search strategy in Embase it was adapted and applied to a further 13 electronic databases. Searches took place between November 2009 and January 2010:

- EMBASE
- MEDLINE
- HMIC
- PsycINFO
- Cochrane Database of Systematic Reviews
- Cochrane Central Register of Controlled Trials
- Database of Abstracts of Reviews of Effectiveness (DARE)
- Social Science Citation Index
- GEOBASE
- PLANEX
- Transport
- ICONDA
- URBADOC
- CAB Abstracts

2.3.2 Websites

A list of websites was agreed with the CPHE team at NICE. A website searching protocol was agreed and applied to all websites searched (Appendix C):

- NICE
- HDA publications (via www.nice.org.uk/page.aspx?o=hda.publications)
- UK and Eire Public Health Observatories (APHO)
- Department for Transport (DfT)
- Department of Communities and Local Government (DCLG)
- Department for Environment, Food and Rural Affairs (DEFRA)
- Planning Inspectorate
- Royal Town Planning Institute (RTPI)

- Chartered Institute of Environmental Health (CIEH)
- WHO (Healthy Cities)
- Commission for Architecture and the Built Environment (CABE)
- International Association for Impact Assessment
- Resource for Urban Design Information (RUDI)
- ISURV
- Planning Advisory Service
- VicHealth
- International Health Impact Consortium
- American Planning Association
- Town and Country Planning Association
- ICLEI
- Environment Agency
- Natural England
- Scottish HIA Network

2.3.2 Grey literature

Grey literature sources of evidence included:

- Bibliography lists of included studies
- Bibliography lists of review articles suggested by experts and authors
- Follow up of references that may meet inclusion criteria suggested by experts and authors in the field

2.3.4 Conducting the search strategy

Where possible, results of the electronic database searches were downloaded to a reference management software tool (RefWorks). Duplicate references were identified and excluded. Titles and abstracts of de-duplicated citations were screened independently by two reviewers to determine eligibility where adequate information was available. Differences in opinion regarding the relevance of a study were resolved by discussion. The full text of eligible citations and of citations where it was not possible to determine eligibility, were obtained. A review of the full text was conducted independently by two reviewers using a screening tool which also

determined eligibility for either Review 1 or Review 2. Electronic data sources that could not be automatically downloaded were viewed on screen by a single reviewer to identify those that met inclusion criteria and manually entered into RefWorks.

2.4 Assessing the quality of the evidence

To assess study quality each included paper was critically appraised. Critical appraisal tools from the manual of Methods for the development of NICE public health guidance (2009) were used where possible. The majority of the evidence arose from evaluations of case studies. A critical appraisal tool for case studies was not included in the manual of Methods for the development of NICE public health guidance, and was therefore developed from a published checklist and agreed with the CPHE team (Appendix E).

Sample quality appraisal by two reviewers was conducted prior to data extraction. Examples were also discussed by the review team to improve inter-rater reliability. An Internal validity score (to indicate potential sources of bias within the study) and an external validity score (to indicate the extent to which a study's findings may be considered generalisable to a wider population) were provided for each included study and summarised in Appendix F.

2.6 Extracting, synthesising and presenting the evidence

A data extraction template was developed from the evidence table proforma provided within the manual of Methods for the development of NICE public health guidance (2009). The template was piloted on two papers and discussed by the review team prior to agreement with the CPHE team. Data extraction was undertaken by a single reviewer who was not blind to the name of the authors, institution or source of the citation. Difficulties in data extraction were resolved through discussion with the review team.

3. Results:

3.1 Quantity of research

A flowchart at Appendix F shows that a total of 6,126 citations were identified from the electronic database and website searches. A further 35 citations were identified from a 'call for evidence'. De-duplication, followed by screening of title and abstracts, excluded 5,926 citations. The full text of 235 remaining citations were obtained and screened, or were ordered via inter-library loan, with the following results:

- Full text copies of five studies that had been ordered, either did not arrive, arrived too late to be reviewed or could not be obtained (either due to a copy not being available through an Inter Library Loan, or because the citation found did not give sufficient detail to be identified). These are listed at Appendix K;
- Despite the abstracts being in English, the full text of four studies was found not to be in the English language (see copy of abstracts at Appendix J);
- Twenty-seven studies were excluded because they did not review a plan appraisal process and were therefore relevant for Review 1 – Project, rather for Review 2;
- Three studies were relevant for both Review 1 and Review 2;
- A further 178 citations did not meet the inclusion criteria and were therefore excluded from Review 2;
- Twenty studies met the inclusion criteria and quality checks.

Please note that because some citations include case studies that are relevant for Reviews 1 and 2 it is therefore not possible to disaggregate some of the figures.

3.2 Quality of the research

A summary of all included studies and the quality grading is shown below, and a more detailed summary of the quality appraisal of each included paper is shown in Appendix G. Only one 'included' citation was considered as achieving the highest grade for internal validity [++], with the remaining being rated [+]. The citation

scoring [++] was judged to have a rigorous methodology. Those scoring [+], were judged to be satisfactory either due to their use of publicly sourced documents and/or clear methodology. There was no consistent pattern explaining why they did not achieve the highest score, but reasons included:

- potential bias (no independent evaluation, with those undertaking the appraisal also responsible for reporting outcomes)
- lack of detail
- lack of triangulation.

Six of the 20 citations achieved [++] for external validity, with two citations only scoring [–].

3.3 Summary of 'included' studies

A list of the' included' studies, together with their internal quality and external validity scores can be found below. Because of the differing regulatory frameworks within developed and less developed countries, the studies have been grouped by high income, and lower and middle income countries, using the World Bank Classification[3].

Table 1: Summary of all 'included' studies (Alphabetical order by first named author)

High Income Countries (World Bank Country Classification as at February 2010)

Study identification Author, year of publication	Country	Internal validity score ++/+/-	External validity score ++/+/-	Appraisal type	Subject of Appraisal
Corburn, J. & Bhatia, R. (2007)	USA	+	++	IA	Urban housing redevelopment
Dannenberg, A., *et al* (2008)	USA	+	+	HIA	1. Rincon Hill Area Plan 2004– Area plan for new downtown residential neighbourhood 2. Eastern Community

[3] See World bank Country Classification at http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/0,,contentMDK:20420458~menuPK:64133156~pagePK:64133150~piPK:64133175~theSitePK:239419,00.html

					Neighbourhoods Community 2006 3. City of Decatur community transportation plan 2007 4. National petroleum reserve – Alaska – oil development plan, Alaska 2007 5. Derby redevelopment 2007 Masterplan, zoning ordinance, design guidelines and budget request for community development project
Douglas, M., et al (2001)	UK	+	+	HIA	Draft Local Transport Strategy
Douglas, M., et al (2007)	UK	++	++	HIA	1. West Yorkshire Local Transport Plan (2000) 2. City of Edinburgh Council's Urban Transport Strategy (2000) 3. London Mayoral Strategy on Transport (2000) 4. Thurrock Local Tranport Plan (2001) 5. The 2003 West Midlands Local Transport Plan (2003)
Farhang, L, et al (2008)	USA	+	++	HIA	Rezoning plan for the Eastern Neighborhoods of San Francisco
Fischer, T., et al (2009)	UK	+	++	SA/SEA SA/SEA SA	1. Scoping Report and Core Strategy Preferred Options Report 2. Local Transport Plan 2 3. Scoping Report and the Key Issues and Strategy Options for a Local Development Plan
Fischer, T., et al (2009)	Germany NL	+	++	SEA	1. Regional plan of Western Saxony 2008 2. Draft local statutory land use plan of Leipzig 2005 3. Structure vision for Emmen

France, C. (2004)	UK	+	+	HIA	Review of adopted Structure Plan policies and revision of emerging Structure Plan.
Glasgow Centre for Population Health (2007)	UK	+	-	HIA	Draft Local Development Strategy
Gow, A., & Dubois, L. (2007)	Australia	+	+	HIA	Two potential residential developments
Greig, S., et al (2004)	UK	+	+	HIA	Planning study of motorway corridor to inform a regeneration investment strategy
Kørnøv, L. (2009)	Denmark	+	++	SEA	Review of 100 Danish SEAs
Ng, K., & Obbard, J. (2005)	Hong Kong	+	+	SEA	Strategic planning case studies: 1. territorial development strategy review 2. third comprehensive transport study
Mathias, K., & Harris-Roxas, B. (2009)	NZ	+	+	HIA	Greater Christchurch Urban development strategy
Mindell, J., et al (2004)	UK	+	+	HIA	Draft Transport Strategy
Neville, L., et al (2005)	Australia	+	+	HIA	Shellharbour Foreshore Management Plan, environment management plan with some land use issues
Planning Advisory Service (2008)	UK	+	+	EqIA	Final draft masterplan to inform the Sustainability Appraisal of plan
Plant, P., et al (2007)	UK	+	-	IIA	Further Alterations to The London Plan
Stevenson, A., et al (2007)	NZ	+	+	HIA	Greater Christchurch Urban Development Strategy 2005
Tennant, K and Newman, C. (2007)	Australia	+	+	HIA	Greater Granville Regeneration Strategy
Wismar, M., *et al* (2007)	UK	+	++	HIA	Draft Air Quality Action Plan

Wismar, M., *et al* (2007)	Finland	+	++	SIA/HIA	Detailed local plan for Korteniitty – complement an existing residential area with low and dense construction
Wismar, M., *et al* (2007)	NL	+	++	HIA	Plan for restructuring an industrial area into a residential area

Low, Lower Middle and Upper Middle Income Countries (World Bank Country Classification as at February 2010)

Study identification Author, year of publication	Country	Internal validity score ++/+/-	External validity score ++/+/-	Appraisal type	Subject of Appraisal
None	-	-	-	-	-

Note: No relevant studies were identified in low, lower middle and upper middle income countries.

3.4 Findings of Evidence

The findings are summarised in evidence tables and related evidence statements. Because of the differing regulatory frameworks within the UK and other high income countries, the studies have been grouped by type of appraisal as shown below:

UK	SA/SEA
	HIA
	Other
Non-UK High Income Countries	SEA
	HIA
	Other

'Other' might include any or a combination of SIA, SA, IA and EqIA and is taken to mean an appraisal that specifically includes environmental, social, health, economic and equity appraisal methods.

The summary evidence tables indicate the findings of the data extraction (full details are in Appendix H) with respect to the objectives in 2.1, namely whether:

Health issues were considered
Health issues were incorporated into the plan
There is evidence of the health recommendations being implemented
There is evidence of post plan adoption evaluation of health outcomes.

The summary evidence tables indicate whether the four primary health issues of interest included:

Physical activity
Mental health and wellbeing
Environmental health factors (for example, air quality, noise pollution)
Unintentional injury

If other specified health issues were described (such as employment) these were noted.

In addition a further factor was considered:

- Knowledge and skills of planners of the importance of health issues.

3.4.1 SA/SEA of plans in the UK

Studies and their context

One citation was identified that reported three case studies: two from England and one from Wales (Fischer, 2009). The case studies relate to:

- SEA of the Peterborough Local Transport Plan which considered two options – 'preferred (major transport) schemes' against a 'do nothing' scenario. The SEA used an HIA-type assessment and was published in 2006

- Sustainability Appraisal of the Peterborough 2006 Development Plan Document Scoping Report and the 2008 Core Strategy Preferred Options Report, which the author of the paper tells us, focused almost entirely on how to deliver economic growth

- Sustainability appraisal of the 2006 Scoping Report and the Key Issues and Strategy Options of the Wrexham Local Development Plan; and the associated 2008 'rapid HIA'.

In terms of the Local Transport Plan (LTP), the Transport Act 2000 requires most local transport authorities (county councils, unitary authorities and partnerships in metropolitan areas) in England (not London) to produce and maintain a LTP. Similar requirements are in place in other countries of the UK. LTPs set out the authority's local transport strategies and policies, and an implementation programme. They are used to:

- inform decisions on capital funding for local authorities;
- inform the development of Department for Transport (DfT) policies on local transport;
- monitor the delivery of DfT key objectives and targets that are delivered through the actions of local government; and
- feed into the authority's Comprehensive Performance Assessment score.

The case study LTP was prepared as one of the second round of these plans. With regard to the development plan documents (DPD), which cover a particular topic or area, in England these form part of an authority's statutory local development framework, which outlines the spatial planning strategy for the local area. The local development framework, together with the regional spatial strategy, provides the strategy to guide, manage and deliver new development and changed for the area. A similar arrangement exists in Wales, with the requirement for Local Development Plans.

The 'issues and options' stage of a DPD is very early in the process of preparation and the 'preferred options' stage follows it. Each is subject to stages of the SA, and indeed should be informed by it, and by public consultation.

3.4.1 Outcome summary table: SA/SEA of plans in the UK

• Evidence of inclusion O NO evidence of inclusion NR Not reported NA Not applicable UC Unclear

		Process outcomes				Specific health issues considered							
Author, Year	Topic	Health issues considered	Health recommendations incorporated	Evidence of implementation	Post adoption evidence	PA[4]	MW[5]	EHI[6]	UI[7]	O[8]	Quality score	External validity score	Significant finding comments
Fischer, T., Matuzzi, M., Nowacki, J. (2009)	Peterborough City Council Sustainability Appraisal of its *Development Plan Document Scoping Report* and *Core Strategy Preferred Options Report*	●	O	NR	NR	●	NR	●	O	●	+	++	Problem of the overall context within which SEA is applied: discretionary planning appears to support – at least potentially – "the consideration of various aspects that may go beyond those traditionally considered. While legalistic planning traditions appear to lead to a limitation of the factors for assessment to those legally required, they often appear to be used subsequently more consistently." The Core Strategy itself did not mention 'health'.

[4] PA-Physical Activity
[5] MW- Mental Wellbeing
[6] EHI- Environmental health impact
[7] UI- Unintentional Injury
[8] O- Other

													Health stakeholders did not participate in the SEA process. & the health comments came from non-health bodies.
Fischer, T., Matuzzi, M., Nowacki, J. (2009)	Sustainability appraisal of the *Scoping Report* and the *Key Issues and Strategy Options* of the *Wrexham Local Development Plan*, December 2006; and the associated 2008 'rapid HIA'.	●	NR	NR	NR	●	NR	●	●	●	+	++	The plan explicitly mentions health numerous times, particularly in the context of health services provisions. Relevant health background documents are listed A Council Health Promotion Team and a Local Health Body were involved in preparation of the SA, whilst the HIA was prepared by the Welsh HIA Support Unit and Wrexham Borough Council. It is suggested that HIA was not used in a fully proactive manner in order to influence the choice of preferred options, but rather in an ex-post manner for mitigating effects of developments that were already decided upon.
Fischer, T., Matuzzi, M., Nowacki, J. (2009)	Peterborough Local Transport Plan SEA which considered 1 option for major transport schemes against 'do nothing'. Used HIA-type assessment	●	UC	UC	NR	●	NR	●	●	●	+	++	Prepared by planning/environmental consultants with main focus on biophysical aspects. Presentation of baseline information was done in descriptive manner, with no maps and impacts limited to short, medium & long term. No explicit mention that decision makers were influenced by health related aspects of this SEA, although it is a requirement of the Directive that the influence of the overall SEA should be detailed. The authors suggest therefore that it is "probable" that health considerations had an impact.

													Problem of the overall context within which SEA is applied: “discretionary planning appears to support – at least potentially – the consideration of various aspects that may go beyond those traditionally considered. While legalistic planning traditions appear to lead to a limitation of the factors for assessment to those legally required, they often appear to be used subsequently more consistently.”

Strength of the evidence

This single citation of moderate quality gives limited evidence of the impact of SA/SEA on the health issues in the planning process from these three case studies (Fischer, 2009 [+]). It is based on documented analysis of published sources.

Impacts

Process Outcomes

The three case studies considered health issues in the appraisal process, as indeed they are required to do so by the EU Directive, but it is unclear or not reported, on whether health recommendations were incorporated into the plan or whether the relevant policies were acted upon: the Peterborough Scoping Report and Core Stategy Preferred Options document provided no evidence of health recommendations being implemented, whilst the Wrexham case study did not report health recommendations, and in the case of the Local Transport Plan it was unclear.

The citation either did not clearly report whether the consideration of health in the SA/SEA process made a difference to the outcome in the LTP case study, or reported no evidence of it in the other two.

In attempting to find a link between the assessment and health outcomes, the authors make the general point that as the EU Directive requires that decision-makers should take the overall results of the assessment into account, it was "probable" that health considerations had an impact.

In the Wrexham case, the citation could not report clearly whether the consideration of health in the SA process made a difference to the outcome of the case study appraisal, but the authors make the point that as the SA/HIA process was only applied to the plan at the preferred options stage, it had little opportunity to influence the plan, other perhaps than in mitigating potential health impacts.

The authors note, that at the higher level of plans such as the core strategy or strategy options, which include only general policy statements and possibly only general locations of development, the evidence of an impact on the plan may only be

a small change to wording, which in turn may be difficult to identify, whereas for the link to concrete future developments, *"the impact may be more measurable".*

Health Issues

The health issues explored in the LTP case study are generally consistent with those normally considered in a second round of these Plans:

- increasing walking and cycling;
- reducing transport related pollution; and
- reducing accidents.

In addition the LTP seeks to narrow health inequalities by improving accessibility.

The health issues considered for the two development plan documents at both the baseline and assessment stages were largely the same (see differences noted in italics in the list):

- Access to health activities/services/social care;
- Health inequalities (e.g. in different neighbourhoods);
- Human behaviour, including healthy lifestyles (cycling), leisure activities (open areas, sport) and food *(in the baseline assessment only for both cases);*
- Biophysical aspects;
- Social/economic aspects, , including education, satisfying employment *(baseline only for Peterborough)* (e.g. work from home), unemployment, affordable housing, poverty, inequality, social exclusion and crime rates;
- Noise and light pollution, vibrations, smell;
- Waste;
- Healthier environments *(baseline only for Peterborough);*
- Health of minorities (e.g. travelling people);
- Health and safety (e.g. accidents) *(not Peterborough).*

Applicability

The evidence from these case studies are directly applicable to the UK and to the current spatial planning system, although with regards the LTP, the goals set by more recent guidance[9] include the requirement for round three of local transport plans to consider the wider determinants of health, including:

- Tackling climate change;
- Promoting equality of opportunity;
- Contributing to Better Safety, Security and Health; and
- Improving quality of life and a healthy natural environment.

3.4.1 Evidence Statement 1: SA/SEA of plans in the UK

There is a conspicuous lack of evidence of evaluations in this critical area. There is only one citation, with three case studies evaluated (one Local Transport Plan and two development plan documents) (Fischer, 2009 [+]). In terms of process, there is a statutory requirement that health is assessed in the SA/SEA process, although only one of these three case studies actually reported whether health issues were incorporated and indicated no evidence of inclusion. Neither was there evidence that health-related recommendations were incorporated into the adopted plan documents, and there is no information given about implementation. Physical activity, environmental health and unintentional injury were identified in all three case studies, but none of the three case studies gives evidence that mental well-being was included. The Local Transport Plan went beyond statutory requirements and included consideration of accessibility which has the potential to reduce health inequalities. The case studies are highly applicable to the UK and the current spatial planning system, however it is important to recognise that as only three case studies were identified, these examples may not be representative of SA/SEA practice in the UK.

[9] Department for Transport, *Guidance on Local Transport Plans, July 2009.*

3.4.2 HIA of plans in the UK

Studies and their context

Seven citations were identified, reporting eleven case studies, from Scotland, England and Northern Ireland: The case studies examined HIA related to the following plans:

- Douglas (2001)
    - Edinburgh City Council Local Transport Strategy, c2000
- Douglas (2007)
    - West Yorkshire Local Transport Plan, 2000
    - City of Edinburgh Council Urban Transport Strategy, 2000
    - London Mayoral Strategy on Transport, 2000
    - Thurrock Local Transport Plan, 2001
    - West Midlands Local Transport Plan, 2003
- France (2004)
    - Adopted 1995 Cambridgeshire Structure Plan 1991-2006 as part of a general review of the policies to input to a revision to inform the emerging Structure Plan (date of HIA – in form of a review – is not stated, but between 1999 & 2004)
- GCPH (2007)
    - Glasgow City Council's draft East End Local Development Strategy, c2006
- Greig (2004)
    - Planning Study of M1 Motorway Corridor in Rotherham and Sheffield to inform an investment strategy for regeneration, c2000
- Mindell (2004)
    - Mayor's draft Transport Strategy for London, 2000
- Wismar (2007)
    - Belfast City Council draft Air Quality Action Plan, 2006.

The case studies cover the last 10-12 years. Transport plans/strategies are perhaps over-represented (seven of the eleven case studies), due in large part to a single

citation (Douglas, 2007) which uses transport initiatives as its focus. The 'wealth' of HIA citations (when compared to the single citation for SA/SEA in the UK) may be explained by the time lag in publication of research following the EU 2001 SEA Directive[10] and its transposition into United Kingdom law by the *Environmental Assessment of Plans and Programmes Regulations 2004*, and in Scotland by the *Environmental Assessment (Scotland) Act 2005*. Also, transport plans lend themselves easily to HIA given the easily measurable health issues of air quality, noise and unintentional injury data. Since the EU SEA Directive, HIA may be commissioned to inform the SA/SEA process, but in any event issues examined by HIA should be incorporated into SA/SEA processes.

[10] European Directive 2001/42/EC

3.4.2 Outcome summary table: HIA of plans in the UK

- Evidence of inclusion O NO evidence of inclusion NR Not reported NA Not applicable UC Unclear

		Process outcomes				Specific health issues considered							Significant finding comments
Author, Year	Topic	Health issues considered	Health recommendations incorporated	Evidence of implementation	Post adoption evidence	PA [11]	MW [12]	EHI [13]	UI [14]	O [15]	Quality score	External validity score	
Douglas, M., Conway, L., Gorman, D., Gavin, S., Hanlon, P. (2001)	HIA of Edinburgh City Council's *Local Transport Strategy*.	●	UC	NR	NR	●	NR	●	●	●	+	+	"HIA can make explicit the health consequences of decisions in different sectors, including impacts on health inequalities. HIA should be done as part of community planning & other partnership activities & should become part of routine decision making." Timing is key: must be part of an iterative process & considered at all stages of plan making, in order to influence decision making.
Douglas M, Thomson, H, Jepson, R, Hurley, F,	HIA of *West Yorkshire local transport*	●	NR	NR	NR	●	NR	●	●	NR	++	++	For all the case studies below: brief summaries of completed HIAs – not critically appraised or evaluated

[11] PA-Physical Activity
[12] MW- Mental Wellbeing
[13] EHI- Environmental health impact
[14] UI- Unintentional Injury
[15] O- Other

Higgins M, Muirie J, Gorman D (2007)	*plan 2000*												HIA recommended to • Promote physical activity • Work with transport professionals Green trans[ort plans in NHS
Douglas, M, Douglas M, Thomson, H, Jepson, R, Hurley, F, Higgins M, Muirie J, Gorman D (2007)	HIA of City of Edinburgh Council *Urban Transport Strategy 2000*	●	NR	NR	NR	●	●	●	●	●	++	++	HIA Supported high cost scenario (out of 3 scenarios based on different levels of funding) and made recommendations to address impact of transport on health inequalities
Douglas, M, Douglas M, Thomson, H, Jepson, R, Hurley, F, Higgins M, Muirie J, Gorman D (2007)	HIA of *London Mayoral strategy on transport 2000*	●	NR	NR	NR	●	●	●	●	●	++	++	HIA made recommendations to promote cycling and walking and include health measures in monitoring
Douglas, M, Douglas M, Thomson, H, Jepson, R, Hurley, F, Higgins M, Muirie J, Gorman D (2007)	HIA of *Thurrock Local Transport Plan 2001*	●	NR	NR	NR	NR	●	NR	NR	●	++	++	HIA rapid assessment Using Swedish county council policy appraisal checklist Including; democracy/opportunity to exert Influence/equality Financial security Employment/meaningful pursuits. Education Social network Access to healthcare and social services Belief in future/life goals and meaning Physical environment Lifestyle factors HIA Supported the plan

Douglas, M, Douglas M, Thomson, H, Jepson, R, Hurley, F, Higgins M, Muirie J, Gorman D (2007)	HIA of 2003 *West Midlands Local Transport Plan*	●	NR	NR	NR	●	●	●	●	●	++	++	HIA Recommended priority given to: walking and cycling accidents and safety targets and monitoring air pollution social inclusion
France, C. (2004)	HIA of adopted *Cambridge-shire Structure Plan 1991-2006* as part of a general review of SP policies *and input to revision of emerging Structure Plan*.	●	●	NR	NR	●	NR	●	●	●	+	+	"Working closely with those developing the Structure Plan meant that there was a real opportunity to input into the process and provide changes as the document emerged. The health care sector and land-use planners can work together to incorporate health issues into a strategic land-use planning document to the overall benefit of the community."
Glasgow Centre for Population Health (2007)	Pilot HIA of Glasgow City Council's *draft East End Local Developmen t Strategy*	●	●	NR	NR	NR	●	●	NR	●	+	-	The fact that planners participated in the process allowed for a fuller understanding of the thinking behind the HIA suggestions. The participatory process using rapid appraisal techniques and bringing together people from a variety of backgrounds proved to be an effective way of integrating health into this strategy. The process also provided a common language for communication between stakeholders and operated as an innovative form of consultation.

Greig, S., Parry, N., Rimmington, B. (2004)	HIA of a *Planning Study* of M1 Motorway Corridor in Rotherham and Sheffield to inform an investment strategy for regeneration .	●	●	●	●	NR	●	●	NR	●	+	+	Partial effectiveness of HIA noted, particularly environmental and community empowerment gains. The added value that experience with HIA can provide to IA is a clear focus, in terms of content, on reducing social inequalities, and, in terms of process, on facilitating the participation of local communities in decision making which affects their quality of life." "It is apparent that the areas where progress has been made have been those within very local control, where continued lobbying and action by local groups and access to relatively small neighbourhood regeneration funds, has resulted in change. It is perhaps not surprising that sub-regional, regional or national levels of policy making have proved much more difficult to influence."
Mindell, J., Sheridan, L., Joffe, M., Samson-Barry, H., Atkinson, S. (2004)	Rapid HIA of Mayor's *draft Transport Strategy for London* (including congestion charge).	●	●	NR	NR	●	NR	●	●	●	+	+	"HIA was successful in influencing the strategy, resulting in several health improvements. HIA is an effective method both for bringing about significant change in policy proposals and in increasing policy makers' understanding of determinants of health and hence in changing attitudes of policy makers."
Wismar, M., Blau, J., Ernst, K., Figeuras, J. eds. (2007).	HIA of Belfast City Council's *draft Air Quality Action Plan*.	●	●	NR	NR	NR	NR	●	NR	●	+	++	Although it was too early to judge the AQAP's effectiveness, overall the HIA had been useful and worthwhile, particularly in raising the profile of health: "there was definitely a change from resistance to believing to accepting".

													“The Council was one of the main drivers for the HIA and therefore this is a good example of the added value that HIA can offer in the development of plans or policies.”

Strength of the evidence

The evidence is largely of moderate quality from six citations (Douglas, 2001 [+]; France, 2004 [+]; GCPH, 2007 [+]; Greig, 2004 [+]; Mindell, 2004 [+]; Wismar, 2007 [+]), with strong evidence for a single citation (Douglas, 2007 [++]).

There is no reason to question the evidence from the citations of moderate quality [+], as this was largely due to the limited detail on process. The reported health issues are sound as these come from analysis of published documents or interviews.

There is a good spread of plan types from the case studies from sub-regional (structure plan - France, 2004) down to very specific local areas, focusing on single issues (air quality action plan – Wismar, 2007). Transport plans or strategies were over-represented, in seven out of the eleven case studies; two specific plans formed four of the case studies. Whilst this spread of plans demonstrates the range of HIA applications, it creates difficulties for comparison and analysis of methodology and outcomes.

Impacts

Process Outcomes

Naturally all the HIA considered health issues, but evidence of completion of the rest of the process outcome range is generally poor. Only one case study (Greig, 2004) reports evidence of health recommendations being carried through into the implementation of the plan (individual site-based integrated implementation plans) and for evaluation of the plan having been done.

Three (France, 2004, GCPH, 2007 and Mindell, 2004) can only report evidence of health recommendations being incorporated into the adopted plan.

Two further case studies (France, 2004 & Wismar, 2007) report that health recommendations were made in the HIA, with the latter explaining that further effectiveness could not be reported as the plan was not yet finalised.

The remaining six case studies (Douglas, 2001 & Douglas, 2007) only report that health outcomes were considered.

Health Issues

The health issues varied, dependant on the citation and the type of plan:

- Seven case studies (the six transport plans/strategies and the Cambridgeshire structure plan) identified issues of physical activity (e.g. walking/ cycling/ accessibility), although four of these reviewed the same two transport plans/strategies;
- Six case studies (four transport plans/strategies, the Glasgow local development strategy & motorway corridor study) addressed mental wellbeing (e.g. connectivity, designing out crime, water as a feature, improved housing);
- Ten addressed environmental health issues (All but one of the seven transport plans/strategies, the Cambridgeshire Structure Plan, Glasgow East End Plan and the M1 Corridor study);
- Seven case studies addressed unintentional injury (All but one of the seven transport plans/strategies and the Cambridgeshire Structure Plan);
- Ten addressed other health issues including community networks, access to health services, equity issues, physical environment upgrade and community transport provision.

Applicability

These citations provide highly applicable evidence of a range of plan types to which HIA can be applied.

3.4.2 Evidence Statement 2: HIA of plans in the UK

There are seven citations reporting eleven case studies, albeit four case studies use the same two plans (the London Transport Strategy (Douglas, 2001 & Douglas 2007) and the Edinburgh Transport Strategy (Douglas 2007 & Mindell 2004) reported in three different citations, but by two different authors. All but one citation (Douglas, 2007 [++]) provides moderate quality evidence (Douglas, 2001 [+]; France, 2004 [+]; Glasgow Centre for Population Health, 2007 [+]; Greig, 2004 [+]; Mindell, 2004 [+]; Wismar, 2007 [+]). Extra weight cannot be given to the evidence supplied by the two Edinburgh case studies as one of the co-authors, Dr Margaret Douglas, was involved with preparation

of the the HIA. Transport plans/strategies were over-represented, in seven out of the eleven case studies.

In terms of process, only one case study reported HIA effectiveness in terms of completion of all stages from health recommendations, to implementation and post adoption evaluation (M1 Corridor Study - Greig, 2004 [+]). Those involved felt the process was useful, indeed successful, in improving the plans, and (in some cases) empowering local communities and environmental interests. Keys to success were seeing the HIA as part of an iterative process throughout plan preparation, and the active involvement of planners with health and other professionals.

All four identified health issues were considered in the case studies, but as may be expected because of the number of transport plans, environmental health issues figured greatly (e.g. air quality, noise). In terms of other health issues, equality was addressed in transport and healthcare facility provision, and in the physical environment.

These citations provide directly applicable evidence of the potential for HIA to influence the range of plans in the UK. HIAs use in informing SA/SEA, or SA/SEA processes should be invaluable.

3.4.3 Other appraisal types of plans in the UK

Studies and their context

Two citations were identified that each reported a single relevant case study, both in England:

- London Borough of Tower Hamlets, Final Draft Whitechapel Masterplan - Equality Impact Assessment (EqIA) to inform the SA (Planning Advisory Service, 2008). Tower Hamlets has high percentages of young people, Asians or British-born Asians and unemployed (with ethnic minorities over-represented). It also has below the national average educational achievement rate.

- Draft Further Alterations to the London Plan - Integrated Impact Assessment (IIA) to inform the SA/SEA (Plant 2007). The London Plan is the overarching framework for all the other strategies produced by the Greater London Authority. The health sector has been involved from the Plan's first incarnation.

In the Whitechapel case the masterplan is the name given to a supplementary planning document (SPD) to promote a key regeneration area in the Borough. It provides the framework that will facilitate the co-ordinated delivery of a variety of actions to ensure that their implementation is carefully integrated with major planned development projects for the area. SPDs are prepared to give greater detail on the policies in the development plan for the area. The must go through the same level of consultation and sustainability appraisal as a development plan in order to gain statutory status. EqIA of all council policies is a requirement of the Equality Framework for Local Government (formerly the Equality Standard for Local Government) in order to assess the impact they may have on race, gender and transgender, disability, age, sexual orientation and religion or belief for the life chances of members of their communities[16].

[16] IdEA 2009 *Key Principles, Equality Framework forLlocalGgovernment,* March 2009 London

The London Plan case study relates to a relatively unusual approach to integrate health into the statutory SA/SEA appraisal of the London Plan.

3.4.3 Outcome summary table: Other appraisal types of plans in the UK

• Evidence of inclusion O NO evidence of inclusion NR Not reported NA Not applicable UC Unclear

		Process outcomes				Specific health issues considered							Significant finding comments
Author, Year	Topic	Health issues considered	Health recommendations incorporated	Evidence of implementation	Post adoption evidence	PA [17]	MW [18]	EHI [19]	UI [20]	O [21]	Quality score	External validity score	
Planning Advisory Service (2008)	EqIA of *final draft Whitechapel Masterplan* to inform *the Sustainability Appraisal*	●	●	NR	NR	●	●	NR	●	●	+	+	The Equality Standard for Local Government requires a baseline & analysis of monitoring data to evidence equality impact, so this case study constitutes good practice. The results of the EqIA highlighted several significant targeted actions in the masterplan which arose from considering ways of reducing inequality.
Plant, P., Herriot, N., Atkinson, S. (2007)	Integrated impact assessment to inform SA/SEA of *The London Plan*	●	●	UC	NR	●	NR	NR	NR	●	+	-	"Planning professionals in London believe that there are already real fruits from greater engagement with the health sector, and joint working has improved the plan-making process, particularly in the light of the new emphasis on spatial

[17] PA-Physical Activity
[18] MW- Mental Wellbeing
[19] EHI- Environmental health impact
[20] UI- Unintentional Injury
[21] O- Other

													planning. London's strong partnership has been built on the GLA's statutory responsibility to promote the health of Londoners (one of its cross cutting themes, the other being promoting sustainability and equality)…"

Strength of the evidence

There is moderate evidence of moderate quality reported from two citations reporting just two case studies (Planning Advisory Service 2008 [+] and Plant 2007 [+]). Neither cites a methodology, but both source information from reliable sources or published documentation.

Impacts

Process Outcomes

The two case studies considered health outcomes and resultant recommendations were made and that these were incorporated into the plan. Only Plant (2007) reports on evidence of implementation (a best practice guide published), however neither studies report evidence of policies being evaluated post- adoption, although Plant, 2007 notes that key health indicators were to be included in monitoring the plan.

Health issues

The health issues addressed in the two case studies included:

- Physical activity in both case studies;
- Mental well-being was only addressed in the Whitechapel case study. It also addressed general health and equality by recommending improved outdoor spaces and indoor leisure facilities and facilities for minority ethnic communities;
- Unintentional injury was only addressed in the Whitechapel case study with the recommendation for a new pedestrian crossing and improvements to the accessibility of Whitechapel station and improvements to reduce street clutter to assist those with reduced mobility;
- Both case studies addressed a range of other health issues including for example climate change, the health legacy from the Olympics and accessibility.

In addition, longer term recommendations were made in relation to:

- The need to ensure that relevant equality (Whitechapel case study) and health indicators (London Plan) are included in the annual monitoring report;

- The use of Natural England design guidance in development of open space in relation to making spaces inclusive and safe for all equality groups, including ethnic minority groups (Whitechapel).

Applicability

The evidence from these case studies is directly applicable to the UK as the population affected is replicated in metropolitan boroughs across the Country. There is also a recent requirement for all local authorities to undertake EqIA of their plans. The IIA is appropriate to ensure that health is fully incorporated into SA/SEA.

3.4.2 Evidence Statement 3: Other appraisal types of plans in the UK

Two citations provide two case studies (an Equality Impact Assessment of a supplementary planning document (PAS 2008 [+]) and an Integrated Impact Assessment of a strategic level spatial development plan (Plant 2007 [+])) and therefore the evidence is limited. In terms of process, whilst both case studies considered health issues and made recommendations that were incorporated into the plans, only Plant (2007 [+]) reports on evidence of implementation, albeit somewhat limited in scope, merely relating to a best practice guide. Neither study reports evidence of policies being evaluated post- adoption.

Both case studies appraised a wide range of health issues, including physical activity. The EqIA appraised all except environmental health issues, and the IIA is reported as only appraising physical activity and 'other' health issues (including access to green space, climate change and public transport provision and management). The case studies are directly applicable to the UK and the current spatial planning system however, it is important to recognise that as only two case studies were identified, these examples may not be representative of 'other' appraisal practice in the UK. Both highlight the potential benefits of extending or perhaps redesigning the usual appraisal processes of SA/SEA.

3.4.4 SEA of plans in non-UK high income countries

Studies and their context

Three citations were identified that report 105 relevant case studies in four countries:

Fisher, 2009 (Germany and the Netherlands)

- Regional plan of Western Saxony, Germany, 2008, which establishes a vision for the development of the planning region, the objectives for the settlement structure, for open space and resource use and for the development of transport infrastructure, energy and defence.
- Draft local statutory land use plan of Leipzig, Germany, 2005, which aims at adapting to overall state and spatial planning, creating a sustainable urban development, ensuring a socially responsible and just use of space as well as a positive environment and protecting and developing natural resources.
- Structure vision for Emmen, Netherlands, 2008, which is a non statutory land use plan that outlines possible future development options. It deals with the ambitions to grow demographically and economically and cover environmental, regeneration, cultural, transport and climate change issues.

Kørnøv, 2009 (Denmark)

- Analysis of 100 environmental reports in SEA of 25 municipal plans and 75 local plans in Denmark, all carried out since 2004. These reports were selected from around 140 environmental reports in total undertaken under SEA legislation. Local plans include themes such as housing, industrial areas, centre and leisure, transport and energy infrastructure, summer houses, golf courses.

Ng, 2005 (Hong Kong)

- Territorial development strategic review (SEA carried out in 1996), which aims at providing a land use-transport-environment framework for the future development of Hong Kong to cater for an increase of population from 6.4 million to 8.1 million in 2011.

- Third comprehensive transport study 1997, aimed at developing a balanced transport strategy with due regard to budgetary and environmental constraints and to facilitate the mobility of people and goods of Hong Kong by road, rail and ferry up to 2016. The study has led to a transport plan for major infrastructure and policies for Hong Kong.

The 105 case studies relate to plans or strategies that were undertaken between approximately 1996 and 2008.

The SEA Directive (Directive 2001/42) on the assessment of the effect of certain plans and programmes on the environment is implemented by all EU member states and serves as legislative basis for case studies in Germany, the Netherlands and Denmark. The Directive requires the consideration of human health, biodiversity, fauna, flora, soil, water, air, climatic factors, material heritage, landscape and the population in strategic assessment.

We can draw the following points on SEA from the background information provided by the Ng's citation. The Hong Kong Special Administrative Area's Government issued a circular in 1988 integrating environment assessment process consistent with SEA within the planning process of Hong Kong. A 1997 Study on Sustainable Development for the 21st Century commissioned by the government then developed guiding principles for the SEA process covering eight key areas of sustainability including health and hygiene, society and social (Ng, 2005).

3.4.4 Outcome summary table: SEA of plans in non-UK high income countries

• Evidence of inclusion O No evidence of inclusion NR Not reported NA Not applicable UC Unclear

		Process outcomes				Specific health issues considered							Significant finding comments
Author, Year	Topic	Health issues considered	Health recommendations incorporated	Evidence of implementation	Post adoption evidence	PA[22]	MW[23]	EHI[24]	UI[25]	O[26]	Quality score	External validity score	
Fischer, T., Matuzzi, M., Nowacki, J. (2009)	Germany Regional plan of Western Saxony 2008 SEA	●	UC	UC	UC	●	NR	●	O	●	+	++	Health stakeholders can participate in SEA Authors think that the SEA has influenced decision-making because health is integral and that decision-making must take account off the SEA. However, impact likely to have been modest (based on other research results by same authors).

[22] PA-Physical Activity
[23] MW- Mental Wellbeing
[24] EHI- Environmental health impact
[25] UI- Unintentional Injury
[26] O- Other

Fischer, T., Matuzzi, M., Nowacki, J. (2009)	Germany draft local statutory land use plan of Leipzig 2005 SEA	●	UC	UC	UC	●	NR	●	O	●	+	++	Consultation still under way at time of writing Health stakeholders can participate in SEA but not sure if they did here. Authors think that the SEA has influenced decision-making because health is integral and that decision-making must take account off the SEA. However, impact likely to have been modest (based on other research results by same authors).
Fischer,T., Matuzzi, M., Nowacki, J. (2009)	NL structure vision for Emmen SEA	●	UC	UC	UC	UC	NR	●	●	NR	+	++	Health stakeholders can participate in SEA SEA appears to have been effective in influencing the final preferred development strategy But no details provided in the study.
Kørnøv, L (2009)	Denmark synthesis of 100 environmental reports in SEA SEA	●	NA	NA	NA	●	NR	●	●	●	+	++	Study only covers the outcomes assessed in environmental reports, synthesising 100 cases in Denmark In Denmark, municipal practice of SEA demonstrates: - Health is included in planning assessment practice - Health is interpreted in a broader sense than national

													guidance - Aspects often included include: noise, drinking water, air pollution, recreation/outdoor life and traffic safety - Both negative and positive impacts on health are assessed - Assessment of human health is qualitative - No reference to equity The presentation of human health impacts lacks in environmental reports (ie no separate heading in reports).
Ng, K., Obbard, J. (2005)	Hong Kong Territorial development strategic review (TDS) SEA	●	UC	NR	NR	NR	NR	●	NR	●	+	+	SEA predicted human health related residual impacts in TDS: - Proposed that some of the identified problems could be mitigated if further resources were applied - Others were identified as requiring policy modifications as no mitigation measures feasible SEA findings have acted to influence the strategy formulation with a number of environmentally damaging options being discarded or significantly modified at an early stage
Ng, K., Obbard, J. (2005)	Hong Kong Third comprehensive	●	●	UC	NR	NR	NR	●	NR	●	+	+	SEA identified air quality degradation as well as noise pollution.

	transport study SEA												SEA applied too late in decision-making process, once development options were already formulated and sanctioned to proceed

Strength of the evidence

All three citations are of moderate quality (Fischer, 2009 [+]; Kørnøv, 2009 [+]; Ng, 2005 [+]). They gave no evidence that health issues had an impact on the planning process. All were based on documentary analysis of independent sources and primary data (local authorities' documents), although one study (Ng, 2005) did not describe its methodology. Additionally, the scope of one study (Kørnøv, 2009, a synthesis of 100 case studies) was limited to examining the health issues *considered* in SEA and consequently did not report on how health considerations impacted on the specific plans.

Impacts

Process outcomes

All three citations provided evidence that health issues are considered in SEA, however only one case study reported that health recommendations were incorporated into the plan – a transport study (Ng, 2005).

None of the case studies showed evidence that the SEA health recommendations had been implemented at post adoption stage.

In attempting to find a link between the assessment and health outcomes, Fischer (2009) makes the general point that as the EU Directive requires that decision-makers should take the overall results of the assessment into account, it was "probable" that health considerations had an impact.

Health issues

Both Fischer (2009) and Ng (2005) include specific health issues which were considered by each of their case studies, whereas Kørnøv (2009 merely synthesizes the issues considered in the 100 studies.

The range of health issues considered in the case studies varied, although no case study refers to mental wellbeing. In the European case studies (that is the regional and local plans and the strategic vision) the issues were:

- Physical activity in all the Fischer and Kørnøv case studies (e.g. recreation and leisure activites by way of open area and sport provision)
- Environmental health in all the Fischer and Kørnøv case studies (e.g. air quality and noise)
- All the Fischer case studies considered weather, climate and flooding, and light pollution
- Unintentional injury was considered as 'traffic safety' in the Kørnøv case studies and in the Emmen Structure Vision (Fischer 2009) as 'accidents'
- Other health issues included access to open/green space, biodiversity (all the Fischer case studies), design of environment/buildings (Fischer: Emmen, and Kørnøv) and risk of crime (Kørnøv).

The Hong Kong case studies (Ng, 2009) focused on environmental health issues, e.g. air and water quality (strategic review) and noise (transport study). Additional health issues were the potential overloading of the sewerage infrastructure (strategic review) and the impact on cultural heritage (transport study).

Applicability

The evidence of two of the citations were (Fisher, 2009 and Kørnøv, 2009) are directly applicable to the UK population, setting and spatial planning system as they refer to case studies in EU countries (Germany, the Netherlands and Denmark), within similar high income and urbanised contexts, all with regional and local development strategies and all required to implement the EU SEA Directive. One study (Ng, 2005) was considered partially applicable because it applies to Hong Kong, where population concentration and governance are only partially comparable to the UK context.

3.4.3 Evidence Statement 4: SEA of plans in non-UK high income countries

There are three citations (Fischer, 2009 [+];Kørnøv, 2009 [+]; Ng, 2005 [+]), all from the last six years, reporting five specific case studies in Germany, the Netherlands and Hong Kong and more generally on 100 studies in Denmark. There is strong evidence from all five case studies, that health is considered in

SEA, but no evidence that the SEA health recommendations had been implemented at post-adoption stage. One author (Ng, 2005 [+]), notes that the level of influence was limited because the application of SEA was made too late in the planning process and Fischer (2009 [+]) attempts to find a link between the assessment and health outcomes, by making the general point that as the EU Directive requires that decision-makers should take the overall results of the assessment into account it was "probable" that health considerations had an impact. The range of health issues considered in the case studies varied, although none referred to mental wellbeing. Most of the European studies considered issues of physical activity, environmental health and unintentional injury, whilst the Hong Knog studies concentrated on environmental health issues. The European case studies are directly applicable to the UK spatial planning context, with the Hong Kong studies only partially so, in view of population concentration and governance.

3.4.5 HIA of plans in non UK high income countries

Studies and their context

Nine citations were identified that report 11 relevant case studies in four countries (USA, Australia, New Zealand and The Netherlands). Three studies (Corburn, 2007; Dannenberg, 2008; Farhrang, 2007), report on the same HIA for rezoning plan for the Eastern Neighbourhoods of San Francisco. Two studies (Mathias, 2009; Stevenson, 2007) both report on HIA for Greater Christchurch Urban Development Strategy 2005:

Corburn, J. 2007 (USA)

- Rezoning plan for the Eastern Neighbourhoods of San Francisco, where residents are mainly low-income. The case study analysed is the application of 2004 HIA outside the formal EIA through a process called the Eastern Neighborhoods Community Health Impact Assessment (ENCHIA), a multi-stakeholder consensus building process.

Dannenberg, A. 2008 (USA)

- Rincon Hill Area Plan 2004– Area plan for new downtown residential neighbourhood
- Eastern Community Neighbourhoods Community 2006 - Area plans and rezoning proposal for 3 contiguous neighbourhoods. The case study covers the ENCHIA process.
- City of Decatur Community Transportation Plan 2007 - Plan for city-wide multi-modal transportation system

Farhang, L. 2008 (USA)

- Rezoning plan for the Eastern Neighbourhoods of San Francisco. The case study covers the ENCHIA process.

Gow, A. 2007 (Australia)

- Two potential residential developments in Bungendore, New South Wales offering alternative scenarios: one considering infill development within the

existing village boundaries and the second combining infill and greenfield development (2005/6).

Mathias, K. 2009 (New Zealand)

- Greater Christchurch Urban development Strategy, 2005. The strategy seeks to guide urban growth in the Greater Christchurch region over the next 40 years with prediction that the region's population will grow from 380,000 to 500,000.

Neville, L. 2005 (Australia)

- Shellharbour Foreshore Management Plan, 2004, local government environmental management plan with some land use issues.

Tennant, K. 2007 (Australia)

- Greater Granville Regeneration Strategy, 2005. The strategy is a long term plan for the social, physical, economic and environmental revitalisation of the area, including a review of public housing that would impact on over 1,500 tenants including approximatively 300 Aboriginal people.

Stevenson, A., 2007 (New Zealand)

- Greater Christchurch Urban Development Strategy, 2005.

Wismar, M. 2007 (the Netherlands)

- Plan for restructuring an industrial area into a residential area in Leiden. The first plans for restructuring the northern area of Leiden started in 1997 with City Council approving the project in 2005.

The 11 case studies relate to nine land-use plans, seven are urban development strategies, one is a transport strategy and one a forest management plan with land use issues.

We can draw the following points on HIA from the background information provided by the citations. In the USA, HIA is a recent practice within land-use planning aimed at assessing the positive and negative health impacts of rezoning and land use

development. There is currently no statutory duty for local authorities to undertake HIA, hence there are still very few guidance or tools provided by federal, state or other levels of government.

In New Zealand, HIA is also an assessment practice within land-use planning which is promoted by public health authorities but there are no legal requirements on local authorities to carry them out. In 2005, the New Zealand Public Health Advisory Committee issued guidance on HIA. Integration of the Treaty of Waitangi principles (i.e. recognition of Maori rights) is implicit in HIA in New Zealand.

In Australia, HIA is developing as an assessment in land-use planning but local authorities have currently no statutory duty to carry out HIA.

In the Netherlands, health effect screening is an assessment practice similar to HIA rapid appraisal.

3.4.5 Outcome summary table: HIA of plans in non UK high income countries

• Evidence of inclusion O NO evidence of inclusion NR Not reported NA Not applicable UC Unclear

		Process outcomes				Specific health issues considered							Significant finding comments
Author, Year	Topic	Health issues considered	Health recommendations incorporated	Evidence of implementation	Post adoption evidence	PA[27]	MW[28]	EHI[29]	UI[30]	O[31]	Quality score	External validity score	
Corburn, J. and Bhatia, R. (2007)	USA Rezoning plan for the Eastern Neighborhoods of San Francisco HIA outside but parallel to a community planning process and its formal environmental review	●	UC	NA	NA	●	●	NR	NR	●	+	++	NB: Evidence of implementation and Post adoption evidence: NA as ENCHIA ongoing at time of writing. ENCHIA has got potential to influence policy: 1. Provides a forum for citizens to enter into and frame planning issues - ENCHIA reflects broader political consensus than at project level - Trinity and Rincon Hill's HIAs1) - HIA outside EIA can transform planning by generating new evidence with impacted stakeholders

[27] PA-Physical Activity
[28] MW- Mental Wellbeing
[29] EHI- Environmental health impact
[30] UI- Unintentional Injury
[31] O- Other

	Eastern Neighborhoods Community HIA (ENCHIA)												
Dannenberg, A., Bhatia, R., Cole, B., Heaton, S., Feldman, J., Rutt, D (2008)	USA All cases										+	+	For all cases below: "Only limited information is available about the impact that these 27 HIAs have had on decision processes. In a few cases, changes in policies or projects were made directly as a result of the HIA. More commonly, the HIA raised awareness of health issues among decision-makers and others; subsequent changes that occurred may be due in part to that increased awareness. HIA practitioners who have ongoing working relationships with their local community leaders may be able to influence decisions more than those who lack such relationships. To accomplish change, such links may be more important than rigorous quantitative data in the HIA report. "
Dannenberg, A., Bhatia, R., Cole, B., Heaton, S., Feldman, J., Rutt, D (2008)	USA Rincon Hill Area Plan 2004– Area plan for new downtown residential neighbourhood Rapid desktop HIA	●	●	UC	NR	●	●	●	●	●	+	+	Increased plan's affordable housing requirement and improved its location: created community impact fund for community services and infrastructure - HIA led to displacement protections - Additional affordable housing - Additional funds for parks and community facilities In terms of equity: HIA highlighted the importance of health disparities among

													racial and socioeconomic groups
Dannenberg, A., Bhatia, R., Cole, B., Heaton, S., Feldman, J., Rutt, D (2008)	USA Eastern Neighbourhoods Community 2006 Area plans and rezoning proposal for 3 contiguous neighbourhoods HIA through community visioning of 27 community health objectives	●	UC	NA	NA	UC	UC	UC	UC	●	+	+	**NB: baseline assessment of 100 community health indicators, so it is unclear which /if all health issues are covered.** HIA created an evaluation methodology through participatory process: healthy development measurement tool (HDMT) Planning commission endorsed use of measurement tool (HDMT) on plans and local land-use planning. This tool has been subsequently applied for 5 land-use plans locally. Area plans incorporated multiple policies and implementing actions were recommended through Healthy development measurement tool evaluation In terms of equity: HIA highlighted the importance of health disparities among racial and socioeconomic groups
Dannenberg, A., Bhatia, R., Cole, B., Heaton, S., Feldman, J., Rutt, D (2008)	USA City of Decatur Community Transportation Plan 2007 Plan for city-wide multi-modal transportation system Rapid HIA –	●	●	UC	UC	●	UC	NR	●	●	+	+	City is making infrastructure improvements; created an active living division to work across departments but it is unclear if this is a direct result of health recommendations being implemented in final draft plan and at post adoption stage

	input from community leaders and local health and planning experts – literature review												
Farhang, L, Bhatia, R., Comerford Scully, C., Corburn, J., Gaydos, M. and Malekafzali, S. **Year:** 2008	USA Rezoning plan for the Eastern Neighborhoods of San Francisco HIA outside but parallel to a community planning process and its formal environmental review Eastern Neighborhoods Community HIA (ENCHIA)	●	UC	NA	NA	●	●	●	●	●	+	++	- Production of 27 policy briefs informed by ENCHIA - development of a Healthy development measurement tool which includes the following indicators: Environmental stewardship Sustainable and safe transportation Public infrastructure/access to goods and services Adequate and healthy housing Healthy economy Social cohesion - subsequently HDMT was piloted on a project (executive park sub-area plan) SF council has used ENCHIA and HDMT to apply to its land use plans prospectively ENCHIA has increased council's understanding of health issues ENCHIA has fostered new relationships between diverse constituent groups
Gow, A. And Dubois, L. 2007	Australia Two potential residential developments in Bungendore	●	●	NR	NR	●	●	●	●	●	+	+	NR: plan not advanced enough to report on this Interim results show match between proposed and actual outputs:

	Prospective HIA												9 broad recommendations covering the identified health promoting elements have been included in local environmental plan, development control and developer contribution plan.
Mathias, K., Harris-Roxas, B. 2009	New Zealand Greater Christchurch Urban development HIA	●	●	UC	UC	●	UC	●	●	●	+	+	Process evaluation: Good integration of maori Impact evaluation: Final UDS incorporated many policy components recommended in HIA (although not all to b attributed solely to HIA) Incorporation of HIA recommendation informal though Influence on policy approach did not however ensure that HIA recommendations were translated into actions.
Neville, L., Furber, S., Thackway, S., Gray, E. & Mayne, D. 2005	Australia Shellharbour Foreshore Management Plan, environment management plan with some land use issues HIA	●	●	NA	NA	●	●	NR	●	●	+	+	NR: SFM not yet implemented at time of reporting. HIA process and final HIA report have assisted in the short and long term planning and implementation phases of the SFM plan: Cycle/walkway Landscaping and community art initiative were identified in HIA as key to benefit heath and were recommended for initial implementation in the plan Potential for HIA to Impact on physical activity and social cohesion

Tennant, K. & Newman, C. (2007)	Australia Greater Granville regeneration strategy HIA	●	●	UC	NR	●	●	NR	NR	●	+	+	Health impacts of the regeneration strategy have been identified by the HIA Outcomes (unclear if these outcomes have been implemented) 1. development of recommendations 2. changes to new bus timetables to meet needs 3. discussion with NSW department o housing to see if HIA can be used as a tool for broader policy applications at the development phase of housing regeneration 4. formal partnership agreement with key stakeholders to progress implementation of HIA recommendations 5. influencing policy drivers that WILL positively affect community health outcomes - bringing community an large organisational stakeholders together on level playing field.
Stevenson, A., Banswell, K. and Pink, R. 2007	New Zealand Greater Christchurch Urban Development Strategy 2005 HIA	●	●	UC	UC	●	UC	●	UC	●	+	+	**Process** was supported by those involved (3,250 respondents), strong support for interdisciplinarity and limit in what could be achieved due to limited resources (staff, money, time). Impact: Greater Christchurch Urban Development Strategy has now a dedicated section on health and well-being acknowledging importance of social and environmental determinants of health Participation of maori increased. 1. HIA directed the focus on the strategy

													on quality of life outcomes. 2. HIA has highlighted the significance of statutory and collective responsibilities relating to health and social outcomes within principles of planning legislation HIA has identified that strategy has a role to deliver on health and social outcomes by informing both local and central government policies (housing, supporting active travel, social connectedness and reduce gaps in health inequalities
Wismar, M., Blau, J., Ernst, K., Figueras, J. 2007	Neatherlands plan for restructuring an industrial area into a residential area in Leiden HIA – Health effect screening (= HIA rapid appraisal)	●	●	UC	UC	●	●	●	UC	NR	+	++	**Authors' Overview:** Most of 17 HIAs in the case studies proved effective in some way, but the magnitude of influence varied from "direct effectiveness" (led to modification), "general effectiveness" (no modification, but links understood & awareness raised), "opportunistic effectiveness" (HIA done in support of proposal), or "no effectiveness". Health Effectiveness: HIA had a general effect on health by increasing the consciousness of decision-makers Equity: no special mention to equity in HIA Community effectiveness: modest achievement, better relationship with local civil servants but passive involvement at later stages of decision-making HIA led to new thoughts on health

													promotion (eg physical activity), but little impact on health protection (eg polluted soil, air pollution)

Strength of the Evidence

The evidence from all nine citations is of moderate quality (Corburn, 2007 [+]; Dannenberg, 2008 [+]; Farhang, 2008 [+]; Gow, 2007 [+]; Mathias, 2009 [+]; Neville, 2005 [+] ; Tennant, 2007 [+]; Stevenson, 2007 [+]; Wismar, 2007 [+]). Eight of the citations (i.e. all excluding Wismar, 2007) have been co-authored by public health practitioners who have either participated in the HIA case study or are working in organisations that have carried out or assisted the HIA process. Hence there is some concern about the potential bias of the authors. The case studies reported by Dannenberg (2008) only give partial detail and lack adequate reporting of the outcomes of the HIA process. Two studies (Tenant, 2007; Stevenson, 2007) simply report on the HIA process without giving detail of their case study methodology.

Impacts

Process outcomes

No case study is reported that completes all the process outcomes.

Eight out of 11 case studies (ten if we consider that two studies cover the same case, Greater Christchurch Urban development Strategy 2005) reported that health recommendations were incorporated into the plans.

The remaining three case studies all report on the same case of the Eastern Neighbourhoods HIA (ENCHIA). It was unclear if the HIA process had been incorporated into the regeneration plan. However, the ENCHIA process led to the introduction of the Healthy Development Measurement Tool (HDMT), a participatory monitoring process which was endorsed by the planning commission and used subsequently by San Francisco in all its land use plans. In all the cases, there is no clear evidence that health considerations influenced the implementation of the strategy, either because the citation did not report on it or the policy process was still not advanced enough at the time of writing to report on post adoption impacts.

Health issues

Generally speaking, the case studies covered all the four specific health issues but only three case studies (Rincon Hill Area Plan, potential residential developments in

Bungendore, rezoning plan for the Eastern Neighborhoods of San Francisco) dealt with all the four specified issues:

- Physical activity was considered by ten case studies e.g. walkability, open spaces (rezoning of eastern neighbourhoods in San Francisco), cycle/walkway (Shellharbour Foreshore management plan, two potential developments in Bungendore),
- Mental wellbeing was considered by eight case studies, including overcrowding (rezoning of eastern neighbourhoods in San Francisco), friendly atmosphere, social interaction and information recreation (Shellharbour Foreshore management plan and Bungendore), proactive conflict management (Bungendore).
- Environmental health issues were considered by eight case studies, including for example air quality (Greater Christchurch urban development strategy) and water quality (such as fluoridation by Bungendore, Greater Christchurch urban development strategy) and water quantity (Bungendore).
- Unintentional injury was considered in seven case studies, including health and safety for various groups, youth, senior, day labourers and domestic workers (eastern neighbourhoods in San Francisco; Shellharbour Foreshore management plan), lighting, wheelchair-accessible footpaths, drinking fountains (Shellharbour Foreshore management plan)
- Ten covered other health outcomes, including access to services, urban design and housing, availability and control over housing (Greater Granville regeneration strategy; Rincon Hill, rezoning of eastern neighbourhoods of San Francisco), social connectedness, housing, transport, engagement with maori (Greater Christchurch urban development), neighbourliness (potential residential developments in Bungendore), social cohesion (Shellharbour Foreshore management plan).

It is reported by Dannenberg (2008) that HIA raised awareness of health issues amongst decision-makers and that development of good working relationships between HIA practitioners and decision-makers may be the most important outcomes from most of the case studies reviewed.

Applicability

All the citations (bar Dannenberg, 2008 which supplied insufficient data for each of the case studies to make conclusions on applicability) are directly applicable to the UK population and setting as they refer to case studies in the USA, the Netherlands, Australia and New Zealand, i.e. countries with similar high income and urbanised contexts and developed land use planning systems. None of these countries have institutionalised HIA. Arguably, the New Zealand and Australian case studies are even more applicable than the US and Dutch cases as the land use planning systems are very similar to the UK's. However the consultation mechanisms developed in the rezoning of the eastern neighbourhoods in San Francisco and the HIA process in Leiden suggest that HIA could be used to ensure communications between key stakeholders, planning authority, health professionals and local residents and transferable into or compared to similar assessment in the UK context.

3.4.4 Evidence Statement 5: HIA of plans in non UK high income countries

There are nine citations reporting 11 case studies in four countries – the USA, Australia, New Zealand and the Netherlands (Corburn, 2007 [+]; Dannenberg, 2008 [+]; Farhang, 2008 [+]; Gow, 2007 [+]; Mathias, 2009 [+]; Neville 2005 [+]; Tennant, 2007 [+]; Stevenson, 2007 [+]; Wismar, 2007 [+]. The 11 case studies relate to land-use plans, urban development strategies, a transport strategy and a forest management plan with land use issues. Five of the citations deal with just two of the case studies (San Francisco rezoning plan in three citations and Greater Christchurch Urban Development Strategy in two). Extra weight cannot be given to the evidence supplied by the San Francisco case studies as Rajiv Bhatia is co-author in all three citations and was involved with the HIA preparation. In the two Christchurch case studies, the co-authors, whilst not the same individuals, were employed by the local public health board involved in supporting the HIA. All citations are from the most recent decade. All nine citations provide moderate quality evidence [+].

The evidence suggests that the HIAs generally influenced the plan. The degree of that influence is varied, even contested, with some analysts

suggesting it is more often through raised health awareness of the decision-makers than directly as a result of the assessment. For instance, in the case of the rezoning of eastern neighbourhoods in San Francisco, the HIA has led to a more inclusive decision-making process with a community based monitoring tool, although this did not directly influence the plan,. However, in all cases, there is no evidence that health recommendations were carried through in the implementation of the strategies or plans and no evidence of post adoption evaluation. All the four health issues were considered. The case studies mostly dealt with a wide range of health issues – some explicitly with health inequalities. In contrast to the UK assessments, all explored physical activity.

All studies were directly applicable to the UK population and setting as they refer to case studies in the USA, the Netherlands, Australia and New Zealand, i.e. countries with similar high income and urbanised contexts.

3.4.6 Other forms of assessment of plans in non-UK high income countries

Studies and their context

Two citations were identified that report three relevant case studies from two countries (USA, Finland):

Dannenberg, A. 2008 (USA)

- Integrated HIA/EIA of an oil development plan for a national petroleum reserve, Alaska 2007

- EIA of a predictive model of vehicle-pedestrian collision Eastern Neighbourhoods Community 2006

Wismar, M. 2007 (Finland)

- HIA and social impact (social impact assessment) of the detailed local plan for Korteniity (process started in 2001)

3.4.6 Outcome summary table: other forms of assessment of plans in non-UK high income countries

• Evidence of inclusion O No evidence of inclusion NR Not reported NA Not applicable UC Unclear

		Process outcomes				Specific health issues considered							Significant finding comments
Author, Year	Topic	Health issues considered	Health recommendations incorporated	Evidence of implementation	Post adoption evidence	PA[32]	MW[33]	EHI[34]	UI[35]	O[36]	Quality score	External validity score	
Dannenberg, A. 2008	USA national petroleum reserve – Alaska – oil development plan, Alaska 2007 Plan for oil and gas leasing in the 4.6 million acre Northeast national	●	●	NR	NR	NR	●	●	NR	●	+	+	Process: Integrated HIA/EIA BLM agreed to include mitigation measures where legally permissible with later acceptance or rejection in subsequent stages of EIA process. BLM also agreed to consider working with a health advisory board.

[32] PA-Physical Activity
[33] MW- Mental Wellbeing
[34] EHI- Environmental health impact
[35] UI- Unintentional Injury
[36] O- Other

	petroleum reserve, Alaska												
Dannenberg, A. 2008	USA Eastern s Community Neighbourhoods Community 2006 Area plans and rezoning proposal for 4 contiguous neighbourhoods EIA Predictive model of vehicle-pedestrian collision	●	●	NA	NA	NA	NA	●	●	NR	+	+	Process: EIA NA: process was on-going at time of writing, so impact on plan implementation cannot be assessed. Draft EIR adopted mitigation measures for air quality and noise impact Recommendations for pedestrian safety under review
Wismar, M., 2007	Finland Detailed local plan for Korteniity,	●	●	UC	UC	●	NR	NA	●	NR	+	++	Process: HIA and social impact (social impact assessment) Post adoption evaluation carried out but SIA direct effects on the plan were difficult to distinguish: However SIA supported discussion, planning and decision-making Provided residents with information From plan summary report: Positive impact on various aspects (bridges, buildings,

													playgrounds, day care...) But this is questioned by interviewee: who thought that SIA had no effect on the planning decision Health effectiveness: No strong evidence suggested that SIA had effect on health effectiveness Equity effectiveness: SIA had a direct effect as the plan was modified and adjusted accordingly (expanding school playing field), but this is contested by another interviewee Community effectiveness: contradictory evidence again here However change in culture and practice in SIA

Strength of the Evidence

Both citations attract a moderate quality score (Dannenberg, 2008 [+] and Wismar, 2007 [+]. The case studies reported by Dannenberg (2008) only give partial detail and lack adequate reporting of the outcomes of the HIA process, whilst Wismar lacked detail on methodology, lacked triangulation of data and analysis of interview evidence.

Impacts

Process outcomes

The two citations reported that health issues were considered in all three case studies, and that all incorporated health recommendations into the plans. The evidence is unclear on whether health considerations in the plans were implementated following their adoption. This may be explained by the policy process not being advanced enough at the time of the research to report on post adoption impacts (for instance, Dannenberg, 2008 in particular).

Thus, whilst health issues were influential in preparing the plans, there is no evidence from the two citations of effectiveness in implementation, nor of any post plan evaluation.

Health issues

The case studies covered all the four specific health issues:

- Physical activity was only reported for the Finnish Local Plan (e.g provision of sports facilities and recreation areas)
- Mental wellbeing was only reported for the Alaskan oil development plan (e.g. domestic violence, suicide);
- Two case studies considered environmental health issues (Alaskan oil development and the Eastern Community Neighbourhood) (e.g air and water quality, and noise pollution);
- Unintentional injury was considered by two case studies (Eastern Community Neighbourhood and Finland case study) (e.g pedestrian and road safety);

- Other health issues were only reported by the Alaskan case study including socio-cultural issues, subsistence resources, access to alcohol and drugs for the Inupiat community.

Applicability

Two of the three case studies (Eastern Communities and Finnish Local Plan) are directly applicable to the UK in terms of population and of setting as they refer to urban case studies in countries with similar high incomes to the UK. The Alaskan case study is not applicable as its context and population is not culturally, geographically or economically relevant to the UK.

3.4.5 Evidence statement 6: other forms of assessment of plans in non-UK high income countries

Two citations reporting on three varied case studies were identified (Dannenberg, 2008 [+] and Wismar, 2007 [+]). A Finnish case study combines HIA and SIA. Two case studies from the USA are based on EIA – one in combination with HIA. The evidence on other appraisal types outside the UK is therefore limited. In terms of process whilst health issues were influential in preparing the plans, there is no evidence from the two citations of effectiveness in implementation, nor of any post plan evaluation. All raised health issues, though none with the full range, and no common pattern. Two of the three case studies are directly applicable to the UK in terms of population and of setting, as they refer to urban case studies in countries with similar high incomes to the UK.

References of Included Studies Identified for Review 2

(Note: some of the 20 citations are also relevant to Review 1. Additionally, some studies identified for Review 2 at the Review 1 stage have since been found not to meet the R2 inclusion criteria)

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Appendix A: Protocol

Search Protocol

The effectiveness of appraisal processes used in spatial planning to address health issues

PH Programme Guidance	Spatial planning for health
CPHE Collaborating Centre	Spatial Planning for Health Collaborating Centre University of the West of England, Bristol
Collaborating Centre Project manager	Selena Gray Selena.Gray@uwe.ac.uk
CPHE Technical Lead	Amanda Killoran
CPHE Associate Director	Jane Huntley
Collaborating Centre Contact	Helen Lease Helen.Lease@uwe.ac.uk

This search protocol outlines the proposed work to complete reviews 1 and 2 of the Spatial planning for health work programme:

Review 1:

The effectiveness of appraisal processes currently in use to address health and wellbeing during project appraisal

Review 2:

The effectiveness of appraisal processes currently in use to address health and wellbeing during plan appraisal

Review Team

The reviews covered by this search protocol will be conducted by a team from the Spatial Planning for Health Collaborating Centre, University of the West of England, Bristol. Team members and roles will be:

Selena Gray	Key contact and overall responsibility for delivery of reviews 1 & 2 to NICE
Hugh Barton	Technical lead: Spatial planning for health expertise for reviews 1 & 2
Julie Mytton	Overview of systematic review processes and contributing to conduct of reviews 1 & 2
Jennifer Joynt	Lead researcher for review 1 (Project appraisal)
Helen Lease	Day to day contact and lead researcher for review 2 (Plan appraisal)
Laurence Carmichael	Researcher for reviews 1 and 2
Maggie Black	Information specialist support for reviews 1 & 2

Key deliverables and dates

Draft protocol for reviews 1 & 2	20th November 2009
Final protocol for reviews 1.& 2 agreed	24th November 2009
Draft search strategy for reviews 1 & 2	25th November 2009
Final search strategy for reviews 1 & 2 agreed	1st December 2009
Draft report review 1	28th January 2010
Management meeting review 1	4th February 2010
Final report review 1	15th February 2010
PDG meeting review 1	4th March 2010
Draft report review 2	8th March 2010
Management meeting review 2	18th March 2010
Final report review 2	1st April 2010
PDG meeting review 2	22nd April 2010

Glossary of terms and concepts used in reviews 1 and 2

Spatial planning	For the purposes of this review spatial planning is a process intended to promote sustainable development and is defined as 'going beyond' traditional land use planning to bring together and integrate policies for the development and use of land with other policies and programs which influence the nature of places and how they function
Sustainable development	Is development that meets the needs of the present generation without compromising the needs of future generations (Brundtland, 1987)
Appraisal	Formal processes of assessing plans or projects for their potential positive and negative impacts (e.g. EIA, HIA)
Health	Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity
Project	Specific development proposals requiring spatial planning
Plan	Spatial plan relating to a whole region, city, town or neighbourhood. It can include topic plans (e.g. for transport, housing and air quality)

Questions that will be addressed

Appraisal approaches

Q1 How effective are approaches to appraisal in terms of influencing planning decisions (at the plan and project level) to secure improvements in health and address health inequalities?

Q2 What lessons can be learnt from other countries about the effectiveness of the above approaches?

Equity

Q3 What is the evidence that health equity issues are effectively considered as part of the appraisal of spatial planning decision-making processes?

Search approach and rationale

The search approach taken will be systematic, but the review team acknowledge that the ability to apply the standard methods for the development of NICE public health guidance to a distal determinant of health such as spatial planning may be constrained. Limitations may arise due to the bringing together of two disciplines (spatial planning and health) with differing definitions, evaluative methodologies and levels of evidence of effectiveness available.

The review team propose that the search strategy undertaken for reviews 1 and 2 will be identical and that identification of studies meeting the inclusion criteria for review 1 (project appraisal) and those meeting the inclusion criteria for review 2 (plan appraisal) will be differentiated during the screening of titles and abstracts, and will be facilitated through the use of a screening tool, as recommended by the NICE Technical Lead. The screening tool will be a checklist for the reviewer screening the titles and abstracts to confirm whether the paper does, or does not, meet the inclusion criteria for review 1 (project appraisal) or review 2 (plan appraisal).

Scoping of databases and search terms indicate that searches will need to be primarily sensitive (to identify relevant information) rather than specific (exclusion of irrelevant material) due to the limited use of indexing and coding terms for the subject areas of spatial planning and assessment / appraisal. The review team propose that EMBASE be used to develop the initial search strategy because the early scoping of the databases suggested that although neither Medline nor Embase contains particularly helpful indexing terms for spatial planning, Embase contained more relevant subject headings than Medline. This search strategy will then be adapted for each of the other databases listed, as appropriate. The clinical databases are much more limited in the availability of relevant subject headings than the non-clinical databases, and the latter are likely to allow a greater degree of precision within the search history than in the clinical databases.

Key words and concepts

We anticipate that the search strategy will focus on 2 main concepts:

Concept 1: Appraisal and assessment processes

To include key words / subject headings that cover

Tools: 'Impact assessment' (all types)

'Appraisal' (all types)

Specific policies: Regional spatial strategy

Local development frameworks

Local transport plans

Regeneration strategies

Concept 2: Health outcomes

To include key words / subject headings that cover

Health (broadest definition)

Specific outcomes: Physical Activity

Mental health and wellbeing

Healthy environment (e.g. air quality)

Unintentional injury

Practitioners and communities engagement with health issues

Electronic sources that will be searched

1. Core databases

- EMBASE
- MEDLINE
- HMIC
- PsycINFO
- Cochrane Database of Systematic Reviews
- Cochrane Central Register of Controlled Trials
- Database of Abstracts of Reviews of Effectiveness (DARE)
- Social Science Citation Index

2. Additional databases

- GEOBASE
- PLANEX

- Transport Research Information Systems (TRIS) and / or Transport
- ICONDA
- URBADOC
- CAB Abstracts

3. Websites

We suggest focusing on those websites that directly consider impact assessment. Websites under consideration to search for reports and documents that meet our inclusion criteria include:

- NICE
- HDA publications (via www.nice.org.uk/page.aspx?o=hda.publications)
- UK and Eire Public Health Observatories
- Department for Transport
- Department of Communities and Local Government
- Department for Environment, Food and Rural Affairs (DEFRA)
- Planning Inspectorate
- Royal Town Planning Institute (RTPI)
- Chartered Institute of Environmental Health (CIEH)
- WHO (Healthy Cities)
- Commission for Architecture and the Built Environment (CABE)
- International Association for Impact Assessment
- Resource for Urban Design Information (RUDI)
- ISURV
- Planning Advisory Service
- VicHealth
- International Health Impact Consortium
- American Planning Association
- Town and Country Planning Association
- ICLEI
- Environment Agency
- Natural England
- Scottish HIA Network

Grey literature

Grey literature sources are likely to be particularly valuable as the limited coding and indexing terms for spatial planning and appraisal / assessment may restrict the number of studies identified from electronic databases. Expert and author contacts will be made requesting both (i) articles known to meet our inclusion criteria and (ii) review articles on the value of appraisal / assessment of plans and projects in health improvement. Bibliography lists of such reviews may indicate studies meeting the inclusion criteria.

Follow up of grey literature sources whilst valuable, are time-consuming, and therefore may need to be limited. Grey literature sources will therefore include:

- Bibliography lists of included studies
- Bibliography lists of review articles suggested by experts and authors
- Follow up of references that may meet inclusion criteria suggested by experts and authors in the field

Use of a screening tool

Results of the electronic database searches will be downloaded to a reference management software tool; RefWorks. Within RefWorks the results of each electronic database will be filed separately. Sources that cannot be automatically downloaded will be viewed on screen to identify those that meet the inclusion criteria and these will be manually entered into their own file in RefWorks. Numbers of citations retrieved and excluded from non-downloadable databases will be documented. In RefWorks a duplicates search will be run to allow duplicates to be identified and excluded. Titles and abstracts of de-duplicated citations will be viewed on screen to determine whether or not they meet the inclusion criteria using a screening tool that will determine eligibility for either review 1 or review 2. At this stage articles that may be interesting for the context, methodology, author expertise or relevance to later reviews will also be identified and catalogued.

Inclusion and exclusion criteria

a) Inclusion criteria

4. Population
    - The human population affected by the proposed project or plan (reviews 1 & 2)

5. Intervention
    - The appraisal or assessment of the impact of the proposed project (review 1) or plan (review 2) on the health of the local population.
    - Technologies and tools to conduct such appraisals include but are not limited to; Strategic Environmental Assessment (SEA), Sustainability Appraisal (SA), Environmental Impact Assessment (EIA), Health Impact Assessment (HIA), Sustainability Impact Assessment (SIA), Integrated Appraisal, Social Impact Assessment (SIA), Equity Impact Assessment, Inequality Impact Assessment, (reviews 1 & 2).
    - Projects and plans may also be referred to using a variety of other terms including but not limited to; strategies or frameworks, which will specifically include Regional Spatial Strategies, Local Development Frameworks, Local Transport Plans (reviews 1 & 2)

6. Comparison
    - No use of the appraisal or assessment process e.g. before and after studies (reviews 1 & 2)
    - An alternative appraisal or assessment process e.g. between country studies (reviews 1 & 2)

7. Outcomes

    One or more of the following outcomes (reviews 1 & 2)
    - Were health outcomes (including health equity issues) considered in the appraisal / assessment process?
    - Were any specific recommendations about health outcomes included following appraisal / assessment?

- Were health recommendations acted upon? / Was there any evidence that any of the health recommendations were implemented?
- Was there any evidence of an impact on health? Specifically:
    - Changes in levels of physical activity?
    - Mental health and wellbeing?
    - Environmental issues affecting health (including air, water & noise pollution, contaminated land, waste management)
    - Unintentional injury?
- Knowledge and skills of planners of the importance of health outcomes?
- Was there evidence of participation and engagement of communities / populations / stakeholders in the discussion of health outcomes?

Examples of study types that will be included (reviews 1 & 2)

- Before and after studies
- Ecological studies
- Case-control or case-comparison studies
- Evaluated case reports or case series

Note: The review team considers it unlikely that evidence from study designs towards the top of the hierarchy of evidence (e.g. RCTs, controlled non-randomised trials, etc) will be found

Restrictions on searches

3. Time period
    - Studies conducted since 1987 (publication of the Brundtland Report: Our Common Future, by the World Commission on Environment and Development)

4. Language
    - No language restrictions will be applied at the search stage of reviews 1 & 2 for electronic database searches.

- We acknowledge that this is contrary to the standard methods for the development of NICE public health guidance but is proposed for two reasons:

1. The review team is aware of good practice in other countries (principally European and Scandinavian countries) that may not be published in English
2. To competently answer Q2 it is necessary to include non-English language articles at the search stage to be able to identify potentially valuable papers.

- It is proposed that, as the majority of non-English language articles will include an English translation of the title and abstract, all languages should be included in the electronic database searches to allow quantification of the contribution of non-English literature to the evidence base. Discussion with NICE will determine subsequent decision-making on how to manage / document these non-English language papers e.g an appendix may report the English titles and abstracts of these papers should we chose to exclude them.

Spatial Planning for Health Collaborating Centre

23rd November 2009

Appendix B: Search methodology and strategy

The search strategy applied to electronic databases is detailed below; this strategy was adapted to accommodate searching of the other databases, some of which did not allow the ease or flexibility afforded by Embase.

Embase (1980 to 2009 Week 50)

1	(spatial or structur$ or core or urban$ or rural or municipal$ or town$ or settlement$ or village$ or region$ or sub-region$ or subregion$ or city or cities or neighbourhood$ or neighborhood$ or local$ or suburb$).tw.	1978715
2	exp urban area/ or exp rural area/ or exp suburban area/ or exp city/	37536
3	(sustainab$ or environment$ or economic$ or social or conservat$ or landscape$ or accessib$ or regenerat$ or renewal or redevelop$).tw.	666087
4	exp environment/ or exp landscape/	1768262
5	(transport$ or cycl$ or bicycl$ or pedestrian$ or walk$ or non-motori#ed or road$ or ringroad$ or rail$ or tram$ or bridge$ or tunnel$ or train$ or underground or metro$ or tube or TGV or motorway$ or street$ or autobahn$ or freeway$ or expressway$ or autostrada or turnpike$ or super#highway$ or carriageway$ or highway$ or path$ or link$ or bus or buses or coach$ or route$ or interchange$ or bypass$ or airport$ or heliport$ or port$ or terminal$ or harbour$ or harbor$ or cargo$).tw.	2717494
6	exp motor vehicle/ or exp bicycle/ or exp motorized transport/ or exp pedestrian/ or exp walking/ or exp railway/ or exp airport/	41910
7	(active adj travel).tw.	18
8	((open or recreation$ or leisure or commun$ or public or play or green or blue) adj space$).tw.	526
9	(park$ or recreation$ or leisure or greenspace$ or garden$ or playground$).tw.	73550
10	exp recreation/ or exp leisure/	13595
11	((land or single or mixed or multi) adj "use").tw.	4152
12	(shop$ or retail$ or outlet$ or market$ or supermarket$ or mall$ or arcade$ or wholesale$ or business$ or office$ or industr$ or commerc$ or service$ or school$ or college$ or universit$ or hospital$ or clinic$ or surger$ or infrastructur$ or building$).tw.	2662130
13	(quarr$ or excavation$ or mine$ or dredg$).tw.	77384
14	((holiday or chalet or caravan) adj (park$ or camp$ or site$ or village$)).tw.	37
15	(mast$ or pylon$ or pipeline$ or (overhead adj cable$)).tw.	62690
16	(hydro#electric$ or nuclear or coal or gas or oil or fuel or electricity).tw.	387496
17	renewable energy.tw.	291
18	exp commerce/ or exp business/ or exp school/ or exp college/ or exp university/ or exp hospital/ or exp health center/	244777
19	((scienc$ or techno$ or educat$ or health) adj park$).tw.	32
20	((distribution or communit$ or health or leisure) adj (centre$ or center$)).tw.	8877
21	(river$ or water or reservoir$ or canal$ or coast$ or fluvial or pluvial or flood$ or swale$ or drain$ or rain$).tw.	437721
22	exp river/ or exp water management/ or exp flooding/ or exp seashore/ or exp rain/	94307
23	(home$ or residen$ or accommodat$ or estate$ or hous$ or apartment$ or flat$ or condominium$).tw.	333491
24	exp home/ or exp housing/ or exp accommodation/ or exp residential area/	13036
25	(incinerat$ or landfill$ or waste or recycl$ or compost$).tw.	53478
26	exp landfill/ or exp recycling/ or exp incineration/ or exp waste management/ or exp composting/	82108
27	((air or water or noise or land or soil) adj (quality or pollut$ or contaminat$ or protect$ or prevent$)).tw.	30227
28	exp air quality/ or exp air pollution/ or exp water quality/ or exp water pollution/ or exp noise pollution/ or exp soil pollution/	144654
29	(eco#town$ or eco#village$).tw.	0

30	(eco adj town$).tw.	2
31	(built adj (environment$ or form)).tw.	339
32	exp building/	3166
33	((green or brown) adj field$).tw.	20
34	(greenfield$ or brownfield$).tw.	575
35	1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34	7085661
36	exp city planning/	342
37	(plan$ or masterplan$ or master#plan$ or framework$ or strateg$).tw.	654328
38	(project$ or proposal$ or develop$ or submission$ or application$).tw.	1991208
39	36 or 37 or 38	2435944
40	35 and 39	1838672
41	exp environmental impact assessment/	8301
42	environmental impact assessment$.mp.	8434
43	environmental appraisal$.mp.	7
44	health impact assessment$.mp.	214
45	strategic environmental assessment$.mp.	30
46	social impact assessment$.mp.	13
47	social impact appraisal$.mp.	0
48	integrated assessment$.mp.	299
49	integrated appraisal$.mp.	3
50	sustainability appraisal$.mp.	1
51	equity impact assessment$.mp.	0
52	equity assessment$.mp.	3
53	equalit$ impact assessment$.mp.	2
54	equalit$ assessment$.mp.	1
55	41 or 42 or 43 or 44 or 45 or 46 or 47 or 48 or 49 or 50 or 51 or 52 or 53 or 54	8882
56	(knowledge or skill$).tw.	244309
57	exp professional knowledge/	2563
58	(participat$ or engagement or stakeholder$ or consult$).tw.	237071
59	exp mental health/	34235
60	exp wellbeing/	17360
61	(mental adj (health or wellbeing or well-being)).tw.	38150
62	exp accidental injury/ or exp accident/	57322
63	(accident$ or injur$).tw.	345241
64	exp physical activity/	106965
65	physical activit$.tw.	28268
66	active travel.tw.	18
67	exp obesity/	107913
68	(obes$ or overweight).tw.	93290
69	exp exercise/	91899
70	exercise$.tw.	122166
71	exp health/	114065
72	((air or particulat$ or water or noise$ or sound$ or acoustic$ or land) adj (quality or pollut$ or contaminat$ or protect$ or prevent$)).tw.	29048
73	(PM10 or "PM2.5" or partic$ or "nitrogen dioxide" or NO2 or "sulphur dioxide" or SO2 or benzene or VOC or "volatile organic compound$").tw.	924529
74	exp air quality/ or exp air pollution/ or exp water quality/ or exp water pollution/ or exp noise pollution/ or exp soil pollution/	144654
75	56 or 57 or 58 or 59 or 60 or 61 or 62 or 63 or 64 or 65 or 66 or 67 or 68 or 69 or 70 or 71 or 72 or 73 or 74	1963699
76	40 and 55 and 75	2685
77	limit 76 to yr="1987 -Current"	2669

78	nonhuman/ not human/	2767956
79	77 not 78	2058

Appendix C: Website search protocol

Purpose

This protocol describes

1. the process by which websites should be searched for evidence that meets the inclusion criteria for reviews 1 and 2 undertaken by the Spatial Planning for Health Collaborating Centre
2. the audit information that should be recorded when a website search is undertaken

Process

- Only websites specified in the search protocol and agreed by NICE should be searched
- New websites/organisations identified during a website search that are considered omissions and therefore potential additions to the list in the search protocol should be discussed initially with the SPfHCC team and, if agreed, a formal request to NICE should be made to amend the search protocol.
- Only pages within the named website should be searched i.e. links to external organisations should not be followed.
    - The only exception to this rule is when an external organisation is required to access the abstract or full text of the evidence sought.
- Each website is searched once, by a named researcher, and details of that search recorded
- Within the website the following areas should be searched where possible:
    1. The website Sitemap or Index
    2. Website section headed ‘Publications’ or ‘Reports’ or equivalent
    3. Website section headed ‘Research’ or ‘Data’ or ‘Evidence’ or equivalent

- Internal search facilities within websites will not routinely be searched because the majority lack the ability to conduct a targeted search and result in a large number of hits with poor precision.

- However, if there is no Sitemap / Index, no Publications / Reports section and no Research / Evidence / Data section, but an internal search facility exists, then a search will be conducted where possible and the terms used recorded
- Appropriate search terms include:
    - Environmental impact assessment
    - Environmental appraisal
    - Health impact assessment
    - Strategic environmental assessment
    - Social impact assessment
    - Social impact appraisal
    - Integrated assessment
    - Integrated appraisal
    - Sustainability appraisal
    - Equity impact assessment
    - Equity assessment
    - Equality impact assessment
    - Equality assessment

Audit information

- For each website searched specific information should be recorded in a separate MS Word document (see template in Annex 1)
- References / evidence / reports should be listed in a bibliography at the end of the table
- Electronic versions of the references / evidence / report should be stored on a shared electronic drive, where available

Annex 1: Template for recording website search information

Website searching template

Organisation Name	
URL	
Searcher name	
Search date	
Sitemap or Index available	Yes / No
Number of records retrieved	
Publications section available (or equivalent)	Yes / No
Number of records retrieved	
Research section available (or equivalent)	Yes / No
Number of records retrieved	
Internal search facility available	Yes / No
Internal search facility used	Yes / No
Search terms used	
Number of records retrieved	
Name of RefWorks folder	
Number of records manually entered into RefWorks folder	
Number of records after deduplication in RefWorks folder	

Identified references for manual entry into RefWorks:

Appendix D: Full text screening tool

If all criteria are met the citation is **included**

If any of the criteria fail to be met the study is **excluded**

Citation:

Author(s):

Title:

Journal/book/report citation:

Inclusion criteria

	Criteria	✓
1	**Population**	
	Populations studied included human populations	
2	**Intervention/Exposure [either a) or b) must be met]**	
a)	An appraisal or assessment undertaken as part of a planning/regulatory process to examine the impact of a proposed project (review 1)	
b)	An appraisal or assessment undertaken as part of a planning /regulatory process to examine the impact of a proposed plan (review 2)	
c)	Health impact assessment done retrospectively	
3	**Comparison [either a) or b) must be met]**	
a)	The study / report includes an objective evaluation (process and /or outcome) of the intervention (development), over time/ before after	
b)	The study / report includes an objective evaluation (process and/or outcome) of the intervention (development) area/…	
4	**Outcomes [at least one of the following must be met/ specified]**	
a)	Levels of physical activity	
b)	Mental health / well being	
c)	Unintentional injuries	
d)	Environmental outcomes affecting health (air quality, water quality, noise pollution, or land contamination)	
e)	Some other element of health	
f)	Health knowledge or skills of planners	
g)	Health outcomes/equity were considered following the appraisal / assessment process	
h)	Recommendations about health outcomes/equity were included following the appraisal / assessment process	
i)	Health/equity recommendations were acted upon / implemented following the appraisal / assessment process	
j)	Health outcomes/equity were discussed as part of participation and engagement of communities / populations / stakeholders	

Exclusion criteria

	Criteria	✓
1	Only non-human fauna, flora or environmental variables were studied	
2	The study did not include an assessment or appraisal process of a project or plan	
3	The assessment / appraisal process used was not one of the included methods: Strategic Environmental Assessment (SEA), Sustainability Appraisal (SA), Environmental Impact Assessment (EIA), Health Impact Assessment (HIA), Sustainability Impact Assessment (SIA), Integrated Appraisal, Social Impact Assessment (SIA), Equity Impact Assessment, Inequality Impact Assessment	
4	Not an evaluation study	
5	Health outcomes or knowledge/skills of planning staff were not reported	
6	Language of full text publication not English*	
7	Date of publication prior to 1987	
8	Other**	

* papers where the title and abstract are in English and suggest a relevant study, but the full text is not available in English will be listed in the appendix, but will not be formally translated.

**'Other' should be recorded .....

Appendix E: Critical appraisal tool for case studies

This checklist has been adapted from:

Critical appraisal guidelines for single case study research. Atkins C & Sampson J. 10th European Conference on Information Systems (ECIS) 2002 June 6-8, Gdansk, Poland

and draws upon Appendix H of the NICE Public Health Methods handbook, Quality appraisal checklist – qualitative studies.

The published guidelines for single case study research assume that data sources will be qualitative. The case studies included in Reviews 1 and 2 by the Spatial Planning for Health Collaborating Centre will use methodologies (e.g. EIA, SEA etc) that will utilise both qualitative and quantitative data sources. The checklist has therefore required adaptation to reflect this mixed research approach.

Note that the sub-questions given as examples under each question are intended to highlight some of the key issues to be considered for that question. They are not intended to be exhaustive. Additional considerations can be recorded in the comments box.

Checklist

Study identification Author, title, reference, year of publication		
Key research question/aim		
Checklist completed by (name)		
Checklist completed on (date)		
Question	**Category**	**Comments**
Way of thinking		
Q1) Is a case study approach appropriate? E.g. Does the author justify using a case study approach? Are the strengths and weaknesses of this approach considered?	☐ Appropriate ☐ Inappropriate ☐ Unclear	
Q2) Is there evidence that any author bias is taken into account when performing the analysis? E.g. Does the author reflect upon how their perspective or stance has influenced the study process or conclusions? What elements of the approach seek to minimise bias?	☐ Yes ☐ No ☐ Unclear	
Way of controlling		
Q3) Has the analysis been confirmed by an independent researcher E.g. has the analysis been undertaken by an	☐ Yes ☐ No ☐ Unclear	

independent researcher not involved in process evaluated?		
Q4) Have opportunities for triangulation of data been exploited? E.g. Have multiple sources of information been used to reduce bias?	☐ Yes ☐ No ☐ Unclear	
Q5) Are the outcomes reported reliable? E.g. were robust sources of information for outcomes used? Were validated instruments used to collect outcome information?	☐ Yes ☐ No ☐ Unclear	
Q6) Do the results / conclusions arise from the data? E.g. Are the results justified? Are the conclusions grounded in the data?	☐ Yes ☐ No ☐ Unclear	
Way of working		
Q7) Are the criteria used to select the appropriate case and participants clearly described?	☐ Clearly described ☐ Unclear ☐ Not described	
Way of supporting		
Q8) Does the study describe and use a systematic method to analyse the data? E.g. is the method for data analysis replicable from the description given?	☐ Clearly described ☐ Unclear ☐ Not described	
Way of communicating		
Q9) Are the aims and objectives of the study clearly stated?	☐ Clearly stated ☐ Unclear ☐ Not stated	
Q10) Are the limitations of the study acknowledged and described? E.g. are the strengths and weaknesses of the study stated?	☐ Clearly described ☐ Unclear ☐ Not described	
Q11) Is sufficient detail given to allow researchers to evaluate the potential transferability of the research to other contexts?	☐ Clear detail ☐ Partial detail ☐ No detail	

Overall assessment

Internal validity
This reflects how well the study was conducted, and the likelihood that the conclusions reflect the truth and are unbiased.

The study should be graded

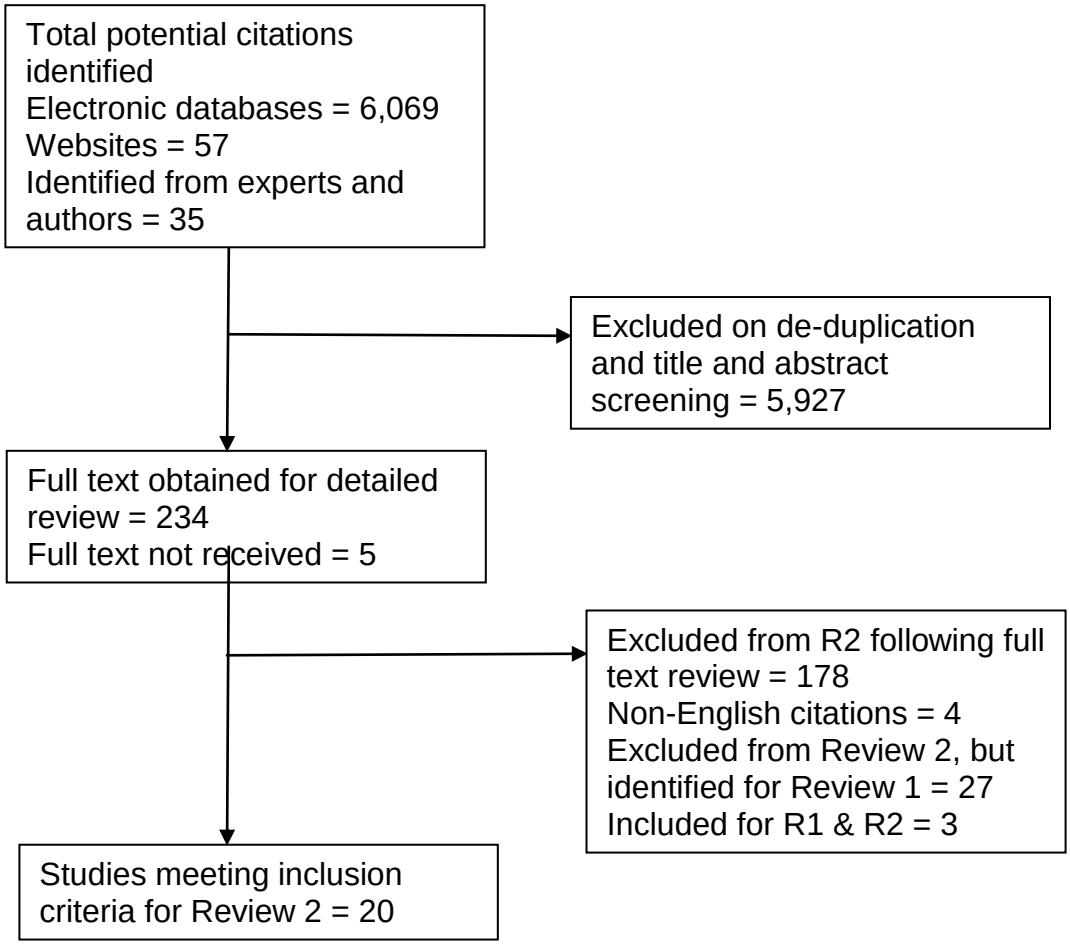
++	All or most of the checklist criteria have been fulfilled, where they have not been fulfilled the conclusions are unlikely to alter
+	Some of the checklist criteria have been fulfilled, where they have not been fulfilled, or not adequately described, the conclusions are unlikely to alter
-	Few or no checklist criteria have been fulfilled. The conclusions are likely or very likely to alter if this information were available.

External validity
This reflects the extent to which the findings of the case study are generalisable beyond the confines of the study to the study's source population. Consider the participants, the intervention, the comparison, the outcomes, and any resource or policy implications.

The study should be graded either ++, + or –

Appendix F: Summary of search findings and included studies for Review 1 and Review 2

Figure 1: Flowchart illustrating included and excluded studies



Please note that because some citations include case studies that are relevant for Reviews 1 and 2 it is therefore not possible to disaggregate some of the figures.

Appendix G: Quality Appraisal of Review 2 'included' studies

Study	Questions from the critical appraisal tool- (see Appendix E)										
	1	2	3	4	5	6	7	8	9	10	11
Corburn, J. (2007)	AP	UC	Y	Y	Y	Y	CD	CD	CS	CD	cd
Dannenberg, A., *et al* (2008)	AP	UC	N	UC	UC	Y	CD	CD	CS	CD	pd
Douglas, M., et al (2001)	AP	N	N	N	Y	Y	ND	ND	UC	ND	nd
Douglas, M.m, et al (2007)	AP	UC	N	Y	Y	Y	CD	CD	CS	CD	cd
Farhang, L, et al (2008)	AP	UC	Y	UC	Y	Y	CD	ND	CS	CD	cd
Fischer, T., et al (2009)	AP	N	Y	Y	Y	Y	CD	CD	CS	ND	cd
France, C. (2004)	AP	N	UC	N	Y	Y	ND	CD	NS	ND	cd
Glasgow Centre for Population Health (2007)	AP	N	UC	N	Y	Y	ND	ND	NS	ND	nd
Gow, A., et al (2007)	AP	UC	N	NR	Y	Y	CD	CD	CS	ND	nd
Greig, S., et al (2004)	AP	N	N	UC	Y	Y	ND	ND	CS	ND	nd
Kørnøv, L. (2009)	AP	UC	Y	NR	Y	Y	CD	CD	CS	ND	cd
Ng, K., and Obbard, J. (2005)	AP	UC	Y	UC	UC	Y	CD	ND	CS	ND	nd
Mathias, K., et al (2009)	AP	Y	Y	UC	Y	Y	CD	CD	CS	CD	cd
Mindell, J., et al (2004)	AP	N	N	N	Y	Y	ND	CD	NS	ND	cd
Neville, L., et al (2005)	AP	UC	UC	UC	Y	Y	CD	ND	CS	ND	pd
Planning Advisory Service (2008)	AP	N	UC	N	Y	Y	ND	ND	CS	ND	nd
Plant, P., et al (2007)	AP	N	N	N	Y	Y	ND	ND	CS	ND	nd
Stevenson, A., et al (2007)	AP	UC	N	NR	Y	Y	ND	ND	CS	ND	nd
Tennant, K and Newman, C. (2007)	AP	UC	N	N	Y	Y	ND	ND	CS	ND	nd
Wismar, M., *et al* (2007)	AP	UC	Y	N	Y	Y	CD	CD	CS	ND	cd

Table key:	Code
Appropriate	AP
Inappropriate	IA
Unclear	UC
Clearly Described	CD
Not Described	ND
Clearly Stated	CS
Not Stated	NS
No detail	nd
Yes	Y
No	N
Clear detail	cd
Partial detail	pd
Not Relevant	NR

Appendix H: Data extraction tables

Data Extraction Tables for each citation included for Review 2 are presented on following pages (in alphabetical order by first named author).

Data extraction form

Title of paper: ***HIA in San Francisco: incorporating the social determinants of health into environmental planning***

Study details	Population and setting	Project details and method of appraisal	Outcomes assessed*	Results	Notes
Authors Corburn, J. and Bhatia, R. **Year:** 2007 **Citation**: Journal of environmental planning and management Vol. 50 (3), 323-341 **Aim of study**: Examines whether and how the social and physical determinants of health can be integrated into the planning process through HIA. **Study design**: Mixed case study methods Participant-observer Document analysis Interviews and narrative qualitatively analysed	**Country**: USA **Setting** urban, San Francisco **Population**: some focus on declining health of Latino and African American population in some neighbourhoods where regenerations is planned and existing tenants evicted; low-income population in general	**Plan:** rezoning plan for the Eastern Neighborhoods of San Francisco **Method of appraisal**: HIA outside but parallel to a community planning process and its formal environmental review Eastern Neighborhoods Community HIA (ENCHIA)	**Outcomes measured :** *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: unclear (iii) Evidence of being implemented: NA (iv) Post-adoption evaluation: NA process on-going at time of writing *b) Specific issues:* (i) Physical activity: Y (ii) Mental wellbeing: Y (iii) Air / noise quality etc: N/R (iv) Unintentional injury: N/R (v) Other health: Y Specify: social determinants of health (housing affordability, overcrowding, neighbourhood walkability measures, open space per capita, access to goods and services, health and safety. *c) Knowledge outcome:* Planners health knowledge or skills: N/R *d) Other outcome*: Y	ENCHIA has got potential to influence policy: - Provides a forum for citizens to enter into and frame planning issues - ENCHIA reflects broader political consensus than at project level - Trinity and Rincon Hill's HIAs1) - HIA outside EIA can transform planning by generating new evidence with impacted stakeholders ENCHIA can transform practice: - By integrating knowledge and expertise from a range of discipline and life experiences **Altogether signs that HIA may improve political networks and**	**Limitations identified by author(s)**: **Limitations identified by review team**: **Evidence gaps &/or recommendations for future research**: 1. Revisiting the impact of ENCHIA process on rezoning plan. 2. Determine whether HIA is more effective when applied to projects or plans 3. Examine how HIA can handle recurring conflicts over political power (communities vs. Private/public investors) **Source of funding**: N/R

Quality score: + **External validity score: ++**			Specify: - new data collected on social determinants of health and available in one place to inform planning - report on health and safety in neighbourhood for sections of population often ignored by epidemiologic studies - development of a Healthy development measurement tool - 27 Policy briefs analysing positive and negative impacts of legislation on neighbourhood residents' well-being	**opportunities for public participation BUT not transform planning in other crucial ways.**	

Data extraction form

Title of paper: ***Use of Health Impact Assessment in the U.S. 27 Case Studies 1999-2007***

Study details	Population and setting	Plan details and method of appraisal	Outcomes assessed*	Results	Notes
Authors Dannenberg, A., Bhatia, R., Cole, B., Heaton, S., Feldman, J., Rutt, D **Year:** 2008 **Citation**: American Journal of Preventative Medicine 2008; 34 (3) **Aim of study**: To document the growing use in the US of health impact assessment methods to help planners and others consider the health consequences of their decisions **Study design**: Review of 27 HIA case studies (some not relevant to this NICE review) **Quality score**: **+** **External validity score: +**	**Country**: USA **Setting** (eg urban/rural) Various **Population**: Various – see individual case study information **Equity:** racial and socio-economic , demographics	**See below for case studies**	**See below for case studies**	"Only limited information is available about the impact that these 27 HIAs have had on decision processes. In a few cases, changes in policies or projects were made directly as a result of the HIA. More commonly, the HIA raised awareness of health issues among decision-makers and others; subsequent changes that occurred may be due in part to that increased awareness. HIA practitioners who have ongoing working relationships with their local community leaders may be able to influence decisions more than those who lack such relationships. To accomplish change, such links may be more important than rigorous quantitative data in the HIA report. "	**Limitations identified by author(s)**: **Limitations identified by review team**: information on individual case studies only reported in a table with article focusing on analysis Co authors involved as primary investigators or consultant for some of the HIA studied. **Evidence gaps &/or recommendations for future research**: More research needed to document the impacts of HIAs on decision processes and health outcomes **Source of funding**: N/R

	Population: San Francisco – 14,000 existing + 12,000 future neighbourhood residents **Equity:** ethnicity/socio-eco. issues	**Plan**: Rincon Hill Area Plan 2004– Area plan for new downtown residential neighbourhood **Method of appraisal**: Rapid desktop HIA	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in proposal: Y (iii) Evidence of being implemented: unclear (iv) Post-development evaluation: N/R *b) Specific outcomes:* (i) Physical activity: Y (ii) Mental wellbeing: Y (iii) Air / noise quality etc: Y (iv) Unintentional injury: Y (v) Other health: Y Specify: affordable housing , access to services and infrastructure *c) Knowledge outcome:* Planners health knowledge or skills: N/R *d) Other outcome*: NR Specify:	**Increased plan's affordable housing requirement and improved its location: created community impact fund for community services and infrastructure** - **HIA led to displacement protections** - **Additional affordable housing** - **Additional funds for parks and community facilities** **In terms of equity: HIA highlighted the importance of health disparities among racial and socioeconomic groups**	
	Population: San Francisco – 134,000 existing and 44,000 future residents **Equity:** issues linked to	**Plan:** Eastern Neighbourhoods Community 2006 Area plans and rezoning proposal for 3	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations	**HIA created an evaluation methodology through participatory process: healthy development measurement tool**	

	residence, ethnicity and socio-econ.	contiguous neighbourhoods **Method of appraisal:** HIA through community visioning of 27 community health objectives	incorporated in plan: unclear (iii) Evidence of being implemented: NA (iv) Post-development evaluation: NA *b) Specific outcomes:* (i) Physical activity: unclear (ii) Mental wellbeing: unclear (iii) Air / noise quality etc: unclear (iv) Unintentional injury: unclear (v) Other health: Y Specify: development of HDMT *c) Knowledge outcome:* Planners health knowledge or skills: Y through measuring tool *d) Other outcome*: N/R Specify: **NB: baseline assessment of 100 community health indicators, so we assume that all the above are covered**	**(HDMT)** **Planning commission endorsed use of a measurement tool (HDMT) on plans and local land-use planning. This tool has been subsequently applied for 5 land-use plans locally.** **Area plans incorporated multiple policies and implementing actions were recommended through Healthy development measurement tool evaluation** **In terms of equity: HIA highlighted the importance of health disparities among racial and socioeconomic groups**	
	Population: San Francisco – 134,000 existing and 44,000 future residents **Equity:** issues linked to	**Same plan as above** **Plan:** Eastern Neighbourhoods Community 2006	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations	**Draft EIR adopted mitigation measures for air quality and noise impact** **Recommendations for**	

	residence, ethnicity and socio-econ	Area plans and rezoning proposal for 4 contiguous neighbourhoods **Method of appraisal:** EIA Predictive model of vehicle-pedestrian collision	incorporated in proposal: Y (iii) Evidence of being implemented: NA (iv) Post-development evaluation: NA *b) Specific outcomes:* (i) Physical activity: NA (ii) Mental wellbeing: NA (iii) Air / noise quality etc: Y (iv) Unintentional injury: Y (v) Other health: NR Specify: *c) Knowledge outcome:* Planners health knowledge or skills: N/R *d) Other outcome*: Specify:	**pedestrians safety under review**	
	Population: 20000 residents and people who work and visit Decatur **Equity:** age, income and disability issues	**Plan:** City of Decatur community transportation plan 2007 Plan for city-wide multi-modal transportation system **Method of appraisal:** Rapid HIA – input from community leaders and local health and planning experts – literature review	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in proposal: Y (iii) Evidence of being implemented: unclear (iv) Post-development evaluation: unclear *b) Specific outcomes:* (i) Physical activity: Y (ii) Mental wellbeing: unclear (iii) Air / noise quality etc: NR	**City is making infrastructure improvements; created an active living division to work across departments**	

			(iv) Unintentional injury: Y (v) Other health: Y Specify: access to health promoting goods and services – social capital *c) Knowledge outcome:* Planners health knowledge or skills: N/R *d) Other outcome*: Specify:		
	Population: Inupiat population **Equity:** ethnicity, cultural	**Plan:** national petroleum reserve – Alaska – oil development plan, Alaska 2007 Plan for oil and gas leasing in the 4.6 million acre Northeast national petroleum reserve, Alaska **Method of appraisal:** Integrated HIA/EIA Stakeholder input Literature review Qualitative analysis	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in proposal: Y (iii) Evidence of being implemented: NR (iv) Post-development evaluation: NR *b) Specific outcomes:* (i) Physical activity: N/R (ii) Mental wellbeing: Y (iii) Air / noise quality etc: Y (iv) Unintentional injury: N/R (v) Other health: Y Specify: socio-cultural issues, subsistence resources, access to alcohol and drugs *c) Knowledge outcome:* Planners health knowledge or skills: N/R	**BLM agreed to include mitigation measures where legally permissible with later acceptance or rejection in subsequent stages of EIA process.** **BLM also agreed to consider working with a health advisory board.**	

			d) Other outcome: Specify:		

Data extraction form

Title of paper: ***Achieving better health through health impact assessment.***

Study details	Population and setting	Plan details and method of appraisal	Outcomes assessed*	Results	Notes
Authors Douglas, M., Conway, L., Gorman, D., Gavin, S., Hanlon, P. **Year:** 2001 **Citation**: Health Bulletin 59(5) September 2001 **Aim of study**: To pilot approaches to HIA and make recommendations for its use as part of the planning & policy making processes in Scotland. **Study design**: Two HIAs were done as case studies (1 relevant), both in partnership with professionals responsible for developing the strategies.	**Country**: Scotland **Setting** (eg urban/rural) Largely urban **Population**: (size, characteristics…) City of Edinburgh Council area: mix of affluence & deprivation	**Plan**: City of Edinburgh draft Local Transport Strategy, designed to reduce traffic congestion. The strategy considers 3 possible transport scenarios & 3 different funding assumptions. **Method of appraisal**: HIA	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: UC (iii) Evidence of being implemented: NR (iv) Post-adoption evaluation: NR *b) Specific issues:* (i) Physical activity: Y (ii) Mental wellbeing: N (iii) Air / noise quality etc: Y (iv) Unintentional injury: Y (v) Other health: Y Specify: - access to amenities - impacts on community networks *c) Knowledge outcome:* Planners health knowledge or skills: Y *d) Other outcome*: NR Specify:	The HIA found that the most detrimental effects of transport were concentrated in more disadvantaged communities. The scenario with greatest funding would produce the greatest health gain, & the scenarios with lower funding would have detrimental effects on health inequalities. Recommendations were made to the transport planners & "*these informed the development of the transport strategy …[this was] consulted on…& is being developed further"* ***"HIA can make explicit the health consequences of decisions in different sectors, including impacts on health inequalities. HIA***	**Limitations identified by author(s)**: None **Limitations identified by review team**: Author involved in preparing the HIA **Evidence gaps &/or recommendations for future research**: - **Source of funding**: The Scottish Executive funded the Scottish Needs Assessment Programme to carry out the 2 pilot HIAs & to develop guidance from the lessons learned.

Quality score: **+** **External validity score:** **+**				***should be done as part of community planning & other partnership activities & should become part of routine decision making."*** **Timing is key: must be part of an iterative process &considered at all stages of plan making, in order to influence decision making.**	

Data extraction form

Title of paper: HIA of transport initiatives – a guide

Study details	Population and setting	Plan details and method of appraisal	Outcomes assessed*	Results	Notes
Authors Douglas M, Thomson, H, Jepson, R, Hurley, F, Higgins M, Muirie J, Gorman D (eds) **Year: 2007** **Citation**: HIA of transport initiatives – a guide, NHS Health Scotland, Edinburgh 2007 **Aim of study**: guide to help people do a HIA: overview of best evidence on the HI of transport initiatives **Study design**: literature review **Quality score**: ++ **External validity score: ++**					**Limitations identified by author(s)**: brief summaries of completed HIAs – not critically appraised or evaluated **Limitations identified by review team**: **Evidence gaps &/or recommendations for future research**: **Source of funding**: NHS Scotland

	Country: England **Setting** various **Population**: West Yorkshire **Equity:**	**Plan**: West Yorkshire Local Transport Plan **Method of appraisal**: HIA Quantified impacts from statistical sources	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: N/R (iii) Evidence of being implemented: N/R (iv) Post-adoption evaluation: N/R *b) Specific issues:* (i) Physical activity: Y (ii) Mental wellbeing: N/R (iii) Air / noise quality etc: Y (iv) Unintentional injury: Y (v) Other health: N/R Specify: *c) Knowledge outcome:* Planners health knowledge or skills: N/R *d) Other outcome*: N/R Specify:	Recommendations: • Promote physical activity • Work with transport professionals • Green transport plans in NHS	
	Country: Scotland **Setting** Edinburgh **Population**: City of Edinburgh **Equity:**	**Plan**: City of Edinburgh Urban Transport Strategy 2000 **Method of appraisal**: HIA – literature, key informants, impacts presented as matrix to show inequalities	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: N/R (iii) Evidence of being implemented: N/R (iv) Post-adoption evaluation: N/R	Supported high cost scenario (out of 3 scenarios based on different levels of funding) and made recommendations to address impact of transport on health inequalities	

			b) Specific issues: (i) Physical activity: Y (ii) Mental wellbeing: Y (iii) Air / noise quality etc: Y (iv) Unintentional injury: Y (v) Other health: Y Specify: access *c) Knowledge outcome:* Planners health knowledge or skills: N/R *d) Other outcome*: N/R Specify:		
	Country: England **Setting** London **Population**: urban **Equity:**	**Plan**: London Mayoral Strategy on transport 2000 **Method of appraisal**: HIA – rapid assessment (literature- stakeholder meetings)	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: N/R (iii) Evidence of being implemented: unclear (iv) Post-adoption evaluation: N/R *b) Specific issues:* (i) Physical activity: Y (ii) Mental wellbeing: Y (iii) Air / noise quality etc: Y (iv) Unintentional injury: Y (v) Other health: Y Specify: improved access *c) Knowledge outcome:* Planners health knowledge or skills: N/R	Many recommendations made to promote cycling and walking and include health measures in monitoring	

			d) Other outcome: N/R Specify:		
	Country: England **Setting:** Thurrock **Population**: Thurrock **Equity:**	**Plan**: Thurrock Local Transport Plan 2001 **Method of appraisal**: HIA rapid assessment Using Swedish county council policy appraisal checklist.	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: N/R (iii) Evidence of being implemented: N/R (iv) Post-adoption evaluation: N/R *b) Specific issues:* (i) Physical activity: N/R (ii) Mental wellbeing: Y (iii) Air / noise quality etc: N/R (iv) Unintentional injury: N/R (v) Other health: Y Specify: democracy/opportunity to exert Influence/equality Financial security Employment/meaningful pursuits. Education Social network Access to healthcare and social services Belief in future/life goals and meaning Physical environment Lifestyle factors *c) Knowledge outcome:* Planners health knowledge or skills: N/R	Supported the plan	

			d) Other outcome: N/R Specify:		
	Country: England **Setting** West Midlands **Population**: N/R **Equity:**	**Plan**: 2003 West Midlands Local Transport Plan **Method of appraisal**: HIA literature and consultation with selected informants	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: N/R (iii) Evidence of being implemented: N/R (iv) Post-adoption evaluation: N/R *b) Specific issues:* (i) Physical activity: Y (ii) Mental wellbeing: Y (iii) Air / noise quality etc: Y (iv) Unintentional injury: Y (v) Other health: Y Specify: access – planning blight *c) Knowledge outcome:* Planners health knowledge or skills: N/R *d) Other outcome*: N/R Specify:	Recommended priority given to: • walking and cycling • accidents and safety • targets and monitoring • air pollution • social inclusion	

Data extraction form

Title of paper: Creating Tools for Healthy Development: Case Study of San Francisco's Eastern Neighborhoods Community HIA

Study details	Population and setting	Project details and method of appraisal	Outcomes assessed*	Results	Notes
Authors Farhang, L, Bhatia, R., Comerford Scully, C., Corburn, J., Gaydos, M. and Malekafzali, S. **Year:** 2008 **Citation**: Journal of Public Health Management Practice 2008 14(3), 255-265 **Aim of study**: Examines whether and how the social and physical determinants of health have been integrated into the planning process through HIA. Describes the ENCHIA process, key outcomes and lessons learned and provides an overview of the healthy development measurement tool	**Country**: USA **Setting** urban, San Francisco **Population**: some focus on declining health of Latino and African American population in some neighbourhoods where regenerations is planned and existing tenants evicted; low-income population in general	**Plan:** rezoning plan for the Eastern Neighborhoods of San Francisco **Method of appraisal**: HIA outside but parallel to a community planning process and its formal environmental review Eastern Neighborhoods Community HIA (ENCHIA)	**Outcomes measured :** *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: unclear (iii) Evidence of being implemented: NA (iv) Post-development evaluation: NA process on-going at time of writing *b) Specific outcomes:* (i) Physical activity: Y (ii) Mental wellbeing: Y (iii) Air / noise quality etc: Y (iv) Unintentional injury: Y (v) Other health: Y Specify: HDMT includes the following indicators: - - Environmental stewardship - Sustainable and safe transportation - Public infrastructure/access to goods and services - Adequate and healthy housing - Healthy economy - Social cohesion Many sub-indicators under each heading.	- Production of 27 policy briefs informed by ENCHIA - development of a Healthy development measurement tool which includes the following indicators: Environmental stewardship Sustainable and safe transportation Public infrastructure/access to goods and services Adequate and healthy housing Healthy economy Social cohesion - subsequently HDMTwas piloted on a project (executive park subarea plan) **SF council has used ENCHIA and HDMT to apply to its land use plans prospectively**	**Limitations identified by author(s)**: **Limitations identified by review team**: **Evidence gaps &/or recommendations for future research**: **Source of funding**: N/R

Study design: case study but method not describe, use of documentary evidence **Quality score**: **+** **External validity score: ++**			*c) Knowledge outcome:* Planners health knowledge or skills: Y *d) Other outcome*: Y Specify: -development of a Healthy development measurement tool	**ENCHIA has increased council's understanding of health issues** **ENCHIA has fostered new relationships between diverse constituent groups**	

Data extraction form

Title of paper: ***The consideration of health in strategic environmental assessment (SEA)***

Study details	Population and setting	Plan details and method of appraisal	Outcomes assessed*	Results	Notes
Authors Fischer, T., Matuzzi, M., Nowacki, J. **Year:** 2009 **Citation**: Environmental Impact Assessment Review Vol 30 (3) (2009)200–210 Doi:10.1016/ j.e.i.a.r.2009.10.005 **Aim of study**: Based on a review of eight SEAs a discussion of the extent to which health aspects are considered in EU Directive based SEAs **Study design**: SEA case studies identified from EU and then analysed for health considerations **Quality score**: **+** **External validity score:**	**Country**: European Union **Setting** (eg urban/rural) Various (see individual case studies where applicable) **Population**: (size, characteristics…) Various (see individual case studies where applicable)	**See case studies below**	**See case studies below**	**General Comments:** **Problem of the overall context within which SEA is applied: discretionary planning appears to support – at least potentially –** ***"the consideration of various aspects that may go beyond those traditionally considered. While legalistic planning traditions appear to lead to a limitation of the factors for assessment to those legally required, they often appear to be used subsequently more consistently."*** ***"What is clear from the analysis provided in this paper, is that health related factors are considered in EC Directive based SEA, but current practice suggests that some gaps remain towards achieving planning systems that can effectively deliver health inclusive SEA."***	**Limitations identified by author(s)**: None **Limitations identified by review team**: None **Evidence gaps &/or recommendations for future research**: **Source of funding**: Financial assistance from European Union

++					
	Country: England	**Plan**: Peterborough City Council 2006 *Scoping Report* and 2008 *Core Strategy Preferred Options Report* **Method of appraisal**: SEA (within context of SA: Used HIA-type assessment).	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: NR (iii) Evidence of being implemented: NR (iv) Post-adoption evaluation: NR *b) Specific issues:* (i) Physical activity: Y (ii) Mental wellbeing: NR (iii) Air / noise quality etc: Y (iv) Unintentional injury: N (v) Other health: Y Specify: - access to health services - health inequalities - open space - socio-economic - healthier environments - equity issues. *c) Knowledge outcome:* Planners health knowledge or skills: NR	**The Core Strategy itself did not mention 'health'** but almost entirely focuses on the question as to how to deliver economic growth. However, the SEA itself works with various health objectives and aspects. The SEA is focussed more on social & behavioural aspects. Interestingly, it is reported that **Health stakeholders** had the possibility to participate in the SEA process, but did not. Health comments came from non-health bodies. E.g. comments (on health and flood risk, biodiversity, accessibility, high quality living environments, healthy lifestyles) came from	

			d) Other outcome: NR Specify:	the Countryside Agency, Environment Agency, English Heritage and 'Opportunity Peterborough' (an urban regeneration company). A comprehensive scoping report was prepared, providing for an extensive health baseline. In this context, the SEA has a section on human health. A crucial problem was however, that these **health baseline data** (along with other baseline data) **do not appear to have been used to any large extent later in assessment**, which was rather vague, frequently leaving implications on particular aspects open. This appears to be connected in particular with the guidance used, which is rather prescriptive on baseline data, but more vague on other issues. Furthermore, **no evaluation of**	

				alternatives was done in the SEA. This was completed separately with the help of a computer-model based 'integrated growth study'. This model only gave little consideration to health impacts. Furthermore, **no clear distinction was made between significant and Insignificant, impacts**.	

	Country: England	**Plan**: Peterborough Local Transport Plan 2 of January 2006 which considered 1 option for major transport schemes against a 'do nothing' option. **Method of appraisal**: SEA	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: UC (iii) Evidence of being implemented: UC (iv) Post-adoption evaluation: NR *b) Specific issues:* (i) Physical activity: Y (ii) Mental wellbeing: NR (iii) Air / noise quality etc: Y (iv) Unintentional injury: Y (v) Other health: Y Specify: Healthier communities & narrowing of health inequalities *c) Knowledge outcome:* Planners health knowledge or skills: NR *d) Other outcome*: NR Specify:	A scoping report was released in 2004. An environmental report was prepared in 2005 and subsequently subject to consultation at the end of the same year. It includes the presentation of baseline conditions and objectives, as well as an assessment of preferred schemes. Two alternatives were considered; 'do-nothing' and 'preferred schemes'. This was followed up by the publication of a final SEA statement in 2006. Prepared by planning/environmental consultants with main focus on biophysical aspects. Presentation of baseline information was done in descriptive manner, with no maps and impacts limited to short, medium & long term. A lot of the baseline data provided on the different aspects subsequently did not appear to have been used later in assessment and the connection between baseline data and assessment is vague.	

				No explicit mention that decision makers were influenced by health related aspects of this SEA, although it is a requirement of the Directive that the influence of the overall SEA should be detailed. The authors suggest therefore that it is "probable" that health considerations had an impact.	
	Country: Wales	**Plan**: Scoping Report and the Key Issues and Strategy Options for Wrexham 2006 Local Development Plan **Method of appraisal**: SA (& associated rapid HIA of March 2008)	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: NR (iii) Evidence of being implemented: NR (iv) Post-adoption evaluation: NR *b) Specific outcomes:* (i) Physical activity: Y (ii) Mental wellbeing: NR (iii) Air / noise quality etc: Y (iv) Unintentional injury: Y (v) Other health: Y Specify: - access to health services - health inequalities - open space	The plan explicitly mentions health numerous times, particularly in the context of health services provisions. Relevant health background documents are listed, including the local 2004 community strategy and the Health, Social Case and Well-being strategy. Furthermore, it states that based on the outcomes of the sustainability appraisal, a separate 'rapid HIA' is to be prepared. A Council Health Promotion Team and a Local Health Body were involved in preparation of the SA, whilst the HIA was prepared by the Welsh HIA Support Unit and	

			- socio-economic - healthier environments - equity issues. *c) Knowledge outcome:* Planners health knowledge or skills: NR *d) Other outcome*: NR Specify:	Wrexham Borough Council. The SA considered social and behavioural aspects and used quantitative and qualitative methods. A lot of the baseline data provided on the different aspects subsequently did not appear to have been used later in and the connection between baseline data and assessment is vague. This suggests that HIA was not used in a fully proactive manner in order to influence the choice of preferred options, but rather in an ex-post manner for mitigating effects of developments that were already decided upon.	
	Country : Germany **Setting:** urban/rural **Population:** 1 M inhabitants on 4000km2 in Lower Saxony **Equity:**	**Plan:** Regional plan of Western Saxony 2008 **Method of appraisal:** SEA	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: unclear (iii) Evidence of being implemented: unclear (iv) Post-adoption evaluation: unclear - general comment on the fact that SEA refers to monitoring programme. No SEA specific monitoring system identified.	Health stakeholders can participate in SEA **Authors thinks that the SEA has influenced decision-making, "Probably fair to say" that the considerations of health in SEA have an impact on final decision-making** **However, impact likely to have been modest (based on other**	

			b) Specific issues: (i) Physical activity: Y (ii) Mental wellbeing: N/R (iii) Air / noise quality etc: Y (iv) Unintentional injury: No evidence (v) Other health: Y Specify: access to open space *c) Knowledge outcome:* Planners health knowledge or skills: N/R *d) Other outcome*: N/R Specify:	**research results by same authors).**	
	Country : Germany **Setting:** urban - Leipzig **Population:** 50000 inhabitants on 300km2 **Equity**	**Plan:** draft local statutory land use plan of Leipzig 2005 **Method of appraisal:** SEA	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: unclear (iii) Evidence of being implemented: unclear (iv) Post-adoption evaluation: unclear - general comment on the fact that SEA refers to monitoring programme. No SEA specific monitoring system identified. *b) Specific issues:* (i) Physical activity: Y (ii) Mental wellbeing: N/R (iii) Air / noise quality etc: Y (iv) Unintentional injury: No	Consultation still under way at time of writing Health stakeholders can participate in SEA but not sure if they did here. **Authors thinks that the SEA has influenced decision-making,** **"Probably fair to say" that the considerations of health in SEA have an impact on final decision-making** **However, impact likely to have been**	

			evidence (v) Other health: Y Specify: socio-economic issues (unemployment, housing, waste, healthier environment); open space *c) Knowledge outcome:* Planners health knowledge or skills: N/R *d) Other outcome*: N/R Specify:	**modest (based on other research results by same authors)**	
	Country : NL **Setting:** town with rural communities Emmen **Population**109000 inhabitants on 350km2 **Equity**	**Plan:** structure vision for Emmen **Method of appraisal:** SEA	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: unclear (iii) Evidence of being implemented: unclear (iv) Post-adoption evaluation: unclear - general comment on the fact that SEA refers to monitoring programme. No SEA specific monitoring system identified. *b) Specific issues:* (i) Physical activity: unclear (only mentioned as open space but not human behaviour) (ii) Mental wellbeing: N/R (iii) Air / noise quality etc: Y (iv) Unintentional injury: Y H&S (v) Other health: N/R Specify:	Health stakeholders can participate in SEA **SEA appears to have been effective in influencing the final preferred development strategy** **But no details**	

			c) Knowledge outcome: Planners health knowledge or skills: N/R *d) Other outcome*: N/R Specify:		

Where information is 'Not reported' or 'Not applicable' this should be recorded
* Only record outcomes relevant to this review. Specify Yes (Y) or No (N) as appropriate. Environmental measures that affect health include air quality, water quality, noise pollution or land contamination Record details in results column
** Only record results relevant to the outcomes in this review

Data extraction form

Title of paper: ***Health contribution to local government planning***

Study details	Population and setting	Plan details and method of appraisal	Outcomes assessed*	Results	Notes
Authors France, C. **Year:** 2004 **Citation**: Environmental Impact Assessment Review 24 (2004) 189–198 **Aim of study**: The extent to which the health care sector and land-use planners can work together to incorporate health issues into a strategic land-use planning document. **Study design**: Review of single case study. **Quality score**: **+**	**Country**: England **Setting** (eg urban/rural) Urban/ rural mix **Population**: (size , characteristics…) Cambridgeshire County	**Plan**: Review of adopted *Cambridgeshire Structure Plan 1991-2006 and input to emerging revised Structure Plan* **Method of appraisal**: HIA (termed HIR-Health Impact Review)	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: Y (iii) Evidence of being implemented: NR (iv) Post-adoption evaluation: NR *b) Specific issues:* (i) Physical activity: Y (ii) Mental wellbeing: NR (iii) Air / noise quality etc: Y (iv) Unintentional injury: Y (v) Other health: Y Specify: - supportive communities - housing & fuel poverty - inequality (including disability, elderly, unemployed) - public transport - flooding - jobs *c) Knowledge outcome:* Planners health knowledge or skills: NR	The HIA derived relevant objectives for health & compared these against plan policies: "*the detailed matrices comparing the 13 objectives against the policies allowed analysis of the potential health benefits and negative health impacts that could arise from the Structure Plan. Through this analysis, it was found that the Structure Plan went some way towards addressing the wider determinants of health such as healthy lifestyle, employment, good quality housing, a clean safe environment and sustainable transport."* Working closely with those developing the Structure Plan meant that there was a real opportunity to input into the process and provide changes as the	**Limitations identified by author(s)**: None **Limitations identified by review team**: Author was part of the health authority input to HIA **Evidence gaps &/or recommendations for future research**: - **Source of funding**: Unknown

External validity score: **+**			*d) Other outcome*: Y/N Specify:	document emerged. Staff in land-use planning and health care sectors need to understand each other's terminologies and know the priorities set for each other by the government. Even if consultants are hired to complete the health impact review, members of the health authority still gave a significant amount of time to this project. Therefore, it is recommended that the human and financial resource is considered at the start of the process. **Conclusion:** ***"The health care sector and land-use planners can work together to incorporate health issues into a strategic land-use planning document to the overall benefit of the community."***	

Data extraction form

Title of paper: ***Piloting HIA as a Method of Integrating Health into Planning: a Case Study of the Draft East End Local Development Strategy***

Study details	Population and setting	Plan details and method of appraisal	Outcomes assessed*	Results	Notes
Authors Glasgow Centre for Population Health **Year:** 2007 **Citation**: GCPH Concepts Series 3, Briefing Paper, June 2007 **Aim of study**: Review of a case study of participatory HIA **Study design**: **Quality score**: **+** **External validity score:** **-**	**Country**: Scotland **Setting** (eg urban/rural) urban **Population**: (size , characteristics…) East End, Glasgow: population has some of poorest health in UK.	**Plan**: Glasgow City Council's *draft East End Local Development Strategy* **Method of appraisal**: HIA	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: Y (iii) Evidence of being implemented: NR (iv) Post-adoption evaluation: NR *b) Specific issues:* (i) Physical activity: NR (ii) Mental wellbeing: Y (iii) Air / noise quality etc: Y (iv) Unintentional injury: NR (v) Other health: Y Specify: - accessibility & sustainable transport - connectivity - housing choice - green space *c) Knowledge outcome:* Planners health knowledge or skills: Y	Many of the suggestions made by stakeholders during the assessment have been incorporated into the Local Development Strategy. The fact that planners participated in the process allowed for a fuller understanding of the thinking behind suggestions than reading a technical report would have allowed. In this case, those responsible for the Local Development Strategy benefited from both the process and the report. **"This pilot Health Impact Assessment of the draft East End Local Development Strategy has been a successful exercise on several levels. The participatory process using rapid appraisal techniques and**	**Limitations identified by author(s)**: None **Limitations identified by review team**: Author prepared the HIA **Evidence gaps &/or recommendations for future research**: Further work is undertaken to provide information on health and its determinants for local populations. **Source of funding**: Unknown

			d) Other outcome: NR Specify:	**bringing together people from a variety of backgrounds proved to be an effective way of integrating health into this strategy. The process also provided a common language for communication between stakeholders and operated as an innovative form of consultation."**	

Data extraction form

Title of paper: ***Bungendore Health Impact Assessment: Urban development in a rural setting***

Study details	Population and setting	Plan details and method of appraisal	Outcomes assessed*	Results	Notes
Authors Gow, A. And Dubois, L. **Year:** 2007 **Citation**: Vol. 18(9-10) NSW Public Health Bulletin **Aim of study**: Examines if HIA has influenced land planning work – reflects on the interim impact evaluation carried out by local planning and health authorities **Study design**: case study – examine and analyse documentary evidence – objective evaluation of the impact of HIA 12 months after it was carried out **Quality score**: +	**Country**: Australia **Setting** Bungendore, urban **Population**: Small town, 2000 people	**Plan: two potential residential developments** **Method of appraisal**: Prospective HIA carried out	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: Y (iii) Evidence of being implemented: NR (iv) Post-development evaluation: NR *b) Specific outcomes:* (i) Physical activity: Y (ii) Mental wellbeing: Y (iii) Air / noise quality etc: Y (iv) Unintentional injury: Y (v) Other health: Y Specify: neighbourliness *c) Knowledge outcome:* Planners health knowledge or skills: N/R *d) Other outcome*: Specify:	**Interim results show match between proposed and actual outputs, i.e. incorporation in plan of 9 broad recommendations covering the identified health promoting elements have been included in local environmental plan, development control and developer contribution plan.**	**Limitations identified by author(s)**: **Limitations identified by review team**: not much details on exactly what recommendations from HIA have been included in plans, but this is really only a summary. **Evidence gaps &/or recommendations for future research**: more similar case studies with impact evaluation. **Source of funding**: No reference to funding

External validity score: +					

Data extraction form

Title of paper: ***Promoting sustainable regeneration: learning from a case study in participatory HIA***

Study details	Population and setting	Plan details and method of appraisal	Outcomes assessed*	Results	Notes
Authors Greig, S., Parry, N., Rimmington, B. **Year:** 2004 **Citation**: Environmental Impact Assessment Review 24 (2004) 255–267. 2004 **Aim of study**: A critical reflection upon the experience of undertaking a comprehensive and participatory health impact assessment in Sheffield's East End. **Study design**: Review of process & outcome of participatory HIA, plus post adoption evaluation **Quality score**: **+**	**Country**: England **Setting** (eg urban/rural) Unknown, but likely mix of urban & rural **Population**: (size, characteristics…) Parts of Rotherham & Sheffield within the M1 motorway corridor	**Plan**: Planning Study to inform consultation process on the M1 Corridor Strategic Economic Zone (Objective 1 investment programme). **Method of appraisal**: HIA	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: Y (iii) Evidence of being implemented: Y (iv) Post-adoption evaluation: NR *b) Specific issues:* (i) Physical activity: NR (ii) Mental wellbeing: Y (iii) Air / noise quality etc: Y (iv) Unintentional injury: NR (v) Other health: Y Specify: - range of physical environment improvements including: traffic reduction, upgrade of local amenities, derelict land improvements - comprehensive labour market strategy - public engagement *c) Knowledge outcome:*	An explicit objective of the HIA was to use it as a tool to increase participation of local communities in strategic development decisions for the area. The methodological framework used was a modification of the Merseyside guidelines with a focus on equity. The HIA process helped to articulate not only local community concerns, but also potential solutions, and that understanding and dialogue between key stakeholders had increased as a result. The final 2001 delivery plan for the M1 Corridor Strategic Economic Zone, set out requirements for individual site Integrated Implementation Plans (IIPs) to which developers have to adhere to receive Obj 1 investment. The IIPs require a 'community development' plan, and some additional elements on environmental and local employment issues, reflecting HIA	**Limitations identified by author(s)**: None **Limitations identified by review team**: Authors prepared the HIA **Evidence gaps &/or recommendations for future research**: **Source of funding**: Unknown

External validity score: **+**			Planners health knowledge or skills: NR *d) Other outcome*: Y Specify: Community engagement	recommendations. **Post-adoption Evaluation** **Positive:** - A number of environmental improvements have taken place - establishment of two community partnership groups to monitor & input to the development of individual sites, so that benefits of regeneration are carried through **Negative:** - least progress on transport recommendations with road building outpacing public transport investment or parking restrictions - poor linkage between economic development & neighbourhood renewal, with latter lagging behind. "***It is apparent that the areas where progress has been made have been those within very local control, where continued lobbying and action by local groups and access to relatively small neighbourhood regeneration funds, has resulted in change. It is***	

				perhaps not surprising that sub-regional, regional or national levels of policy making have proved much more difficult to influence." ***"The added value that experience with HIA can provide to IA is a clear focus, in terms of content, on reducing social inequalities, and, in terms of process, on facilitating the participation of local communities in decision making which affects their quality of life***."	

Data extraction form

Title of paper: ***SEA as catalyst of healthier spatial planning***

Study details	Population and setting	Plan details and method of appraisal	Outcomes assessed*	Results	Notes
Authors Kørnøv, L **Year:** 2009 **Citation**: EIA review 29, p. 60-65 **Aim of study**: Examines the inclusion of health as a formal component in impact assessment of spatial planning. Based on a documentary study of 100 environmental reports, article analyses and discusses how health impact considerations are incorporated in SEA practice in Denmark. **Study design**: Documentary analysis of 100 environmental reports	**Country**: Denmark **Setting** urban and rural **Population**: N/R **Equity:** N/R	**Plan**: synthesis of 100 environmental reports **Method of appraisal**: SEA	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: NA* (iii) Evidence of being implemented: NA* (iv) Post-development evaluation: NA* *b) Specific outcomes:* (i) Physical activity: Y (ii) Mental wellbeing: N/R (iii) Air / noise quality etc: Y (iv) Unintentional injury: Y (v) Other health: Y Specify: recreation/outdoor life *c) Knowledge outcome:* Planners health knowledge or skills: N/R *d) Other outcome*: N/R Specify:	In Denmark, municipal practice of SEA demonstrates: - Health is included in planning assessment practice - Health is interpreted in a broader sense than national guidance - Aspects often included include: noise, drinking water, air pollution, recreation/outdoor life and traffic safety - Both negative and positive impacts on health are assessed - Assessment of human health is qualitative - No reference to equity **The presentation of human health impacts lacks in environmental reports (i.e. no separate heading in reports)**	**Limitations identified by author(s)**: **Limitations identified by review team**: *NA used here as NO reference to impact of environmental reports on plans and policies; article only covers the outcomes assessed in environmental reports **Evidence gaps &/or recommendations for future research**: **Source of funding**: not known

Quality score: + **External validity score: ++**					

Data extraction form

Title of paper: ***Process and Impact evaluation of the Greater Christchurch Urban development HIA***

Study details	Population and setting	Plan details and method of appraisal	Outcomes assessed*	Results	Notes
Authors Mathias, K., Harris-Roxas, B. **Year:** 2009 **Citation**: BMC Public Health 9: 97 **Aim of study**: Process and impact evaluations of the Greater Christchurch urban development strategy options paper in NZ **Study design**: Qualitative case study methodologies Key informant interviews Focus groups questionnaires **Quality score**: +	**Country**: NZ **Setting** urban Christchurch **Population**:380000 **Equity**: incorporation of treaty of Waitangi, rights of Maori	**Plan:** Greater Christchurch Urban development HIA **Method of appraisal**: HIA	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: Y (iii) Evidence of being implemented: unclear (iv) Post-development evaluation: unclear *b) Specific outcomes:* (i) Physical activity: Y (ii) Mental wellbeing: unclear (iii) Air / noise quality etc: Y (iv) Unintentional injury: Y (v) Other health: Y Specify: Social connectedness, housing, transport, engagement with Maori *c) Knowledge outcome:* Planners health knowledge or skills: Y *d) Other outcome*: Specify:	Process evaluation: Good integration of maori Impact evaluation: Final UDS incorporated many policy components recommended in HIA (although not all to b attributed solely to HIA) Incorporation of HIA recommendation informal though Influence on policy approach did not however ensure that HIA recommendations were translated into actions. **Positive impact on:** **Strengthening cross-sectoral partnerships** **Increase role of health in local government agenda** **Majority of HIA recommendation adopted by the policy**	**Limitations identified by author(s)**: **Limitations identified by review team**: **Evidence gaps &/or recommendations for future research**: **Source of funding**: Process evaluation funded by community and public health Ministry of health funded the impact evaluation

External validity score: +				**body** **Amendment to policy implementation** **Improved engagement with maori** **Limits:** **Health determinants approach yet to be endorsed by other actors**	

Data extraction form

Title of paper: ***Health impact assessment as an agent of policy change: improving the health impacts of the mayor of London's draft transport strategy.***

Study details	Population and setting	Plan details and method of appraisal	Outcomes assessed*	Results	Notes
Authors Mindell, J., Sheridan, L., Joffe, M., Samson-Barry, H., Atkinson, S **Year:** 2004 **Citation**: Journal of Epidemiology & Community Health 2004;58:169–174 **Aim of study**: To review the effectiveness of the HIA on a draft transport strategy. **Study design**: Comparison of HIA recommendations to adopted strategy **Quality score**: **+** **External validity**	**Country**: England **Setting** (eg urban/rural) Inner urban **Population**: (size , characteristics…) Capital city with issues of equality and wealth disparities, and traffic congestion.	**Plan**: Draft Transport Strategy **Method of appraisal**: Rapid prospective HIA	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: Y (iii) Evidence of being implemented: NR (iv) Post-adoption evaluation: NR *b) Specific issues:* (i) Physical activity: Y (ii) Mental wellbeing: NR (iii) Air / noise quality etc: Y (iv) Unintentional injury: Y (v) Other health: Y Specify: - social inclusion & equity in provision & pricing of public transport - community transport - integration of transport investment with economic development. *c) Knowledge outcome:* Planners health knowledge or skills: Y	Significant changes were made to the final version of the strategy, including: - Equity of access to public transport - Encouragement of walking, cycling & public transport - Home zones, 20mph zones & safer routes to school - Commitments to consult on transport policies - Some health related indicators were included for monitoring strategy The changes from the draft to the public consultation draft were definitely attributable to the HIA. Changes between the public consultation draft and the final strategy might have been attributable to other consultation responses, or such responses may have added weight to recommendations from the HIA. Transport planners at	**Limitations identified by author(s)**: None **Limitations identified by review team**: Authors were involved with preparation of HIA **Evidence gaps &/or recommendations for future research**: **Source of funding**: No funding

score: **+**			*d) Other outcome*: Y/N Specify: Proposed indicators: some are specifically health related, while most relate to the wider determinants of health.	TfL & the GLA told HIA authors that most of the changes noted in the final strategy as concordant with the HIA recommendations were attributable to the HIA process. The mayor himself attributed the emphasis in the final Transport Strategy on increasing walking and cycling, reducing reliance on private cars, and reducing the need to travel, to the recommendations of the HIA. **Authors' conclusions:** **"HIA was successful in influencing the transport strategy for London, resulting in several improvements from a health viewpoint. HIA is an effective method both for bringing about significant change in policy proposals and in increasing policy makers' understanding of determinants of health and hence in changing attitudes of policy makers."**	

Data extraction form

Title of paper: ***A Health Impact Assessment of an environmental management plan the impact on physical activity and social cohesion***

Study details	Population and setting	Plan details and method of appraisal	Outcomes assessed*	Results	Notes
Authors Neville, L., Furber, S., Thackway, S., Gray, E. And Mayne, D. **Year:** 2005 **Citation**: Health Promotion Journal of Australia, 16 (3). **Aim of study**: To describe a prospective HIA on a local government environment management plan and analyses its impact on decision making process **Study design**: Case study Analysis of the 5 stages	**Country**: Australia **Setting** New South Wales- rural/urban (eg urban/rural) **Population**: (size , characteristics…) **Equity: Aboriginal and Torres Strait Islander people and people born oversees** **People over 60**	**Plan**: Shellharbour Foreshore Management Plan, environment management plan with some land use issues **Method of appraisal**: HIA	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in proposal: Y (iii) Evidence of being implemented: NA (iv) Post-development evaluation: NA *b) Specific outcomes:* (i) Physical activity: Y (ii) Mental wellbeing: Y (iii) Air / noise quality etc: N/R (iv) Unintentional injury: N/R (v) Other health: Y Specify: social cohesion *c) Knowledge outcome:* Planners health knowledge or skills: N/R *d) Other outcome*: N/R Specify:	HIA process and final HIA report have assisted in the short and long term planning and implementation phases of the SFM plan: Cycle/walkway Landscaping and community art initiative were identified in HIA as key to benefit heath and were recommended for initial implementation in the plan Potential for HIA to Impact on physical activity and social cohesion HIA report will potentially attract funding for particular initiatives **HIA has brought together different sources of evidence and HIA provides a**	**Limitations identified by author(s)**: **Limitations identified by review team**: **Evidence gaps &/or recommendations for future research**: lack of guidance in literature on the weighting or prioritising of different sources of evidence to assist in formulation of recommendations. **Source of funding**: Non mentioned

of HIA **Quality score**: + **External validity score: +**				**useful framework to develop relationship between local government and health sector.**	

Data extraction form

Title of paper***: Strategic environment assessment in Hong Kong***

Study details	Population and setting	Plan details and method of appraisal	Outcomes assessed*	Results	Notes
Authors Ng, K.L., Obbard, J. P. **Year:** 2005 **Citation**: Environment International 31 483-492 **Aim of study**: Examines the development and application of SEA process in the planning framework of Hong Kong and evaluates 2 strategic planning case studies. **Study design**: case study, methodology not described **Quality score**: +	**Country**: Hong Kong **Setting** urban with rural spaces **Population**: 6.4 M **Equity:** N/R	**Plan**: Territorial development strategic review **Method of appraisal**: SEA	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: unclear (iii) Evidence of being implemented: N/R (iv) Post-development evaluation: N/R *b) Specific outcomes:* (i) Physical activity: N/R (ii) Mental wellbeing: N/R (iii) Air / noise quality etc: Y (iv) Unintentional injury: N/R (v) Other health: Y Specify: Overloading of sewage infrastructure *c) Knowledge outcome:* Planners health knowledge or skills: N/R *d) Other outcome*: N/R Specify:	SEA predicted human health related residual impacts in TDS: - Proposed that some of the identified problems could be mitigated if further resources were applied - Others were identified as requiring policy modifications as no mitigation measures feasible But SEA conducted for the development options, but not during formulation of the options SEA application compromised in its ability to achieve sustainable development Findings of SEA were not seriously considered SEA by recommending	**Limitations identified by author(s)**: **Limitations identified by review team**: Study does not explain clearly if health outcomes were incorporated in plan, it only states that SEA did consider health and that some recommendations were taken into account in plan conclusions in study seem contradictory at time (See results) **Evidence gaps &/or recommendations for future research**: **Source of funding**: not known

External validity score: +				the provision of environmental related infrastructure, SEA process served to highlight key environmental issues to the general public and decision-makers. SEA findings have acted to influence the strategy formulation with a number of environmentally damaging options being discarded or significantly modified at an early stage **SEA has helped to integrate and balance environmental concerns with the ambitious land use and transport development demands of a prosperous and growing population but SEA limited:** - **Development led** - **SEA application constrained at beginning of planning process due to the vague proposals of alternative development**	

				proposals	
	Same as above	**Plan:** Third comprehensive transport study **Method of appraisal:** SEA	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: Y NB: but see results (iii) Evidence of being implemented: unclear (iv) Post-development evaluation: N/R *b) Specific outcomes:* (i) Physical activity: N/R (ii) Mental wellbeing: N/R (iii) Air / noise quality etc: Y (iv) Unintentional injury: N/R (v) Other health: Y Specify: Cultural heritage *c) Knowledge outcome:* Planners health knowledge or skills: N/R *d) Other outcome*: N/R Specify:	SEA identified air quality degradation as well as noise pollution SEA applied too late in decision-making process, once development options were already formulated and sanctioned to proceed **SEA has been development led, failure to apply SEA at formulation stage has resulted in limited development alternatives being explored to avoid environmental degradation (air and noise)** **SEA has helped to integrate and balance environmental concerns with the ambitious land use and transport development demands of a prosperous and growing population but SEA limited:**	

				- **Development led** - **SEA application constrained at beginning of planning process due to the vague proposals of alternative development proposals**	

Data extraction form

Title of paper: ***Equality and diversity: improving planning outcomes for the whole of the community***

Study details	Population and setting	Project details and method of appraisal	Outcomes assessed*	Results	Notes
Authors Planning Advisory Service **Year:** 2008 **Citation**: IDeA September 2008 **Aim of study**: Identifying good practice in planning for equality and diversity **Study design**: Review of selected case studies (one relevant) **Quality score**: **+** **External validity score:** **+**	**Country**: England **Setting** (e.g. urban/rural) Inner urban city **Population**: (size, characteristics…) LB Tower Hamlets-high %: - of young people - Asian/British born Asian - Unemployed with ethnic minorities over represented Also below national average educational achievement rate.	**Project**: Draft Whitechapel Masterplan, November 2006 **Method of appraisal**: EqIA (Equality Impact Assessment) to inform SA (Sustainability Appraisal)	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: Y (iii) Evidence of being implemented: NR (iv) Post-adoption evaluation: NR *b) Specific issues:* (i) Physical activity: Y (ii) Mental wellbeing: Y (iii) Air / noise quality etc: NR (iv) Unintentional injury: Y (v) Other health: Y Specify: - outdoor spaces & indoor leisure - accessibility *c) Knowledge outcome:* Planners health knowledge or skills: Y *d) Other outcome*: Y Specify: -Monitoring of equality indicators -using design guidance	The Equality Standard Local Government requires a baseline of monitoring data and an analysis of this to evidence equality impact, so this case study constitutes good practice. The results of the EqIA highlighted several significant targeted actions in the masterplan which arose from considering ways of reducing inequality: - improved outdoor spaces and indoor leisure facilities with a particular benefit for those with ill-health and opportunities to encourage greater participation in these spaces and facilities for minority ethnic communities - a new pedestrian crossing and improvements to the accessibility of Whitechapel station	**Limitations identified by author(s)**: Had to limit to "shorter-term focused process impacts". **Limitations identified by review team**: No methodology. Information presented by LPA officers - not corroborated. **Evidence gaps &/or recommendations for future research**: **Source of funding**: Unknown, presumably PAS

			to ensure open spaces are inclusive and safe for all	and improvements to reduce street clutter all of which should have benefits for those with reduced mobility. The EqIA went further to recommend equality improvements to the masterplan which will be considered in the implementation of the plan. These include: - the need to ensure that relevant equality indicators are included in the annual monitoring report - the use of Natural England design guidance in development of open space in Whitechapel in relation to making spaces inclusive and safe for all equality groups, including ethnic minority groups.	

Data extraction form

Title of paper: ***Healthy Planning in London***

Study details	Population and setting	Plan details and method of appraisal	Outcomes assessed*	Results	Notes
Authors Plant, P, Herriot, N., Atkinson, S. **Year:** 2007 **Citation**: Town & Country Planning, February 2007, pp 50-51 **Aim of study**: Article explaining how partnership working in London has increased planning's potential to improve the health of Londoners and reduce health inequalities. **Study design**: None specified **Quality score**: **+** **External validity score:** **+**	**Country**: England **Setting** (eg urban/rural) Urban **Population**: (size, characteristics…) Capital City …. Six-year difference in life expectancy between West London and East End boroughs, plus historic under-supply of housing	**Plan**: First draft *Further Alterations to The London Plan* **Method of appraisal**: Integrated Impact Assessment to input into the SA/SEA	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: Y (iii) Evidence of being implemented: Y (iv) Post-adoption evaluation: NR *b) Specific outcomes:* (i) Physical activity: Y (ii) Mental wellbeing: NR (iii) Air / noise quality etc: NR (iv) Unintentional injury: NR (v) Other health: Y Specify: - climate change - transport demand management actions - promotion of policies for play areas, childcare & access to greenspace - health legacy from 2012 Olympics *c) Knowledge outcome:* Planners health knowledge or skills: Y	Health sector involved in the Plan from the start. An initial HIA was undertaken on the original draft London Plan, which gave an evidence base & stakeholder involvement. HUDU set up & Integrated impact assessment evolved. The draft Further Alterations build on a significant health component. **"Planning professionals in London believe that there are already real fruits from greater engagement with the health sector, and joint working has improved the plan-making process, particularly in the light of the new emphasis on spatial planning.** **London's strong partnership has been built on the GLA's statutory responsibility to promote the health of**	**Limitations identified by author(s)**: None **Limitations identified by review team**: Authors are health professionals working in London & possibly involved with this case study. **Evidence gaps &/or recommendations for future research**: None reported **Source of funding**: Not reported.

			d) Other outcome: Y Specify: - best practice guidance on health improvement with good practice examples of how planning impacts on wider determinants of health - including health indicators in the Plan to monitor Plan's implementation	**Londoners (one of its cross cutting themes, the other being promoting sustainability and equality)…"**	

Data extraction form

Title of paper: ***Greater Christchurch Draft Urban Development Strategy 2005***

Study details	Population and setting	Plan details and method of appraisal	Outcomes assessed*	Results	Notes
Authors Stevenson, A., Banswell, K. and Pink, R. **Year:** 2007 **Citation**: Vol. 18 (9-10), NSW Public Health Bulletin **Aim of study**: Description of the Greater Christchurch Urban Development Strategy 2005's HIA: its development and implementation and the results from the process evaluation. Examines whether the HIA is a useful tool for local government policy **Study design**:	**Country**: New Zealand **Setting** urban **Population**: Greater Christchurch **Equity:** maori involvement in process	**Plan:** Greater Christchurch Urban Development Strategy 2005 **Method of appraisal**: HIA	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in proposal: Y (iii) Evidence of being implemented: unclear (iv) Post-development evaluation: unclear (= process and impact evaluation) *b) Specific outcomes:* (i) Physical activity: Y (ii) Mental wellbeing: unclear (iii) Air / noise quality etc: Y (iv) Unintentional injury: N/R (v) Other health: Y Specify: Hhousing and transport - social connectedness *c) Knowledge outcome:* Planners health knowledge or skills: N/R *d) Other outcome*: Specify:	**Process** was supported by those involved (3250 respondents), strong support for interdisciplinarity and limit in what could be achieved due to limited resources (staff, money, time). **Impact: Greater Christchurch Urban Development Strategy has now a dedicated section on health and well-being acknowledging importance of social and environmental determinants of health Participation of maori increased.** - **HIA directed the focus on the strategy on quality of life outcomes.** - **HIA has highlighted the significance of statutory and collective**	**Limitations identified by author(s)**: **Limitations identified by review team**: **Evidence gaps &/or recommendations for future research** **Source of funding**: N/R

Case study – report on process evaluation carried out, document analysis for impact evaluation and **Quality score**: + **External validity score: +**				**responsibilities relating to health and social outcomes within principles of planning legislation** - **HIA has identified that strategy has a role to deliver on health and social outcomes by informing both local and central government policies (housing, supporting active travel, social connectedness and reduce gaps in health inequalities**	

Data extraction form

Title of paper: Greater Granville Regeneration Strategy

Study details	Population and setting	Plan details and method of appraisal	Outcomes assessed*	Results	Notes
Authors Stevenson, A., Banswell, K. and Pink, R. **Year:** 2007 **Citation**: Vol. 18 (9-10), NSW Public Health Bulletin **Aim of study**: Description of the impact of the Greater Granville Regeneration Strategy's HIA: identification of the positive and negative health impacts **Study design**: **Quality score**: +	**Country**: Australia **Setting** urban **Population**: Greater Granville's residents, 1500 tenants including 300 Aboriginals **Equity:** Aboriginals	**Plan**: Greater Granville regeneration strategy **Method of appraisal**: HIA	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in proposal: Y (iii) Evidence of being implemented: unclear (iv) Post-development evaluation: NR *b) Specific outcomes:* (i) Physical activity: Y (ii) Mental wellbeing: Y (iii) Air / noise quality etc: N/R (iv) Unintentional injury: N/R (v) Other health: Y Specify: access to services, urban design and housing: availability and control over housing *c) Knowledge outcome:* Planners health knowledge or skills: N/R *d) Other outcome*: N/R Specify:	Health impacts of the regeneration strategy have been identified by the HIA Outcomes: 1. development of recommendations 2. changes to new bus timetables to meet needs 3. discussion with NSW department o housing to see if HIA can be used as a tool for broader policy applications at the development phase of housing regeneration 4. formal partnership agreement with key stakeholders to progress implementation of HIA recommendations 5. influencing policy drivers that WILL positively affect community health outcomes	**Limitations identified by author(s)**: **Limitations identified by review team**: **Evidence gaps &/or recommendations for future research**: Not sure if details of the outcomes have been implemented Future evaluation should consider the full extent of the HIA outcomes relative to the resource investment. **Source of funding**: N/R

External validity score: +				6. bringing community and large organisational stakeholders together on level playing field.	

Data extraction form

Title of paper: ***The Effectiveness of Health Impact Assessment, Scope and limitations of supporting decision-making in Europe***.

Study details	Population and setting	Plan details and method of appraisal	Outcomes assessed*	Results	Notes
Authors Wismar, M., Blau, J., Ernst, K., Figueras, J. Eds **Year:** 2007 **Citation**: World Health Organization 2007, on behalf of the European Observatory on Health Systems and Policies. **Aim of study**: To map HIA use in EU & evaluate its effectiveness. **Study design**: Literature review & then map HIA use across EU. Review effectiveness of 17 HIA case studies (3 relevant to this Review) **Quality score**:		Three individual plans across EU – all analysed by HIA or a form of HIA:	**See individual case studies below**	**Authors' Overview:** Most of 17 HIAs in the case studies proved effective in some way, but the magnitude of influence varied from "direct effectiveness" (led to modification), "general effectiveness" (no modification, but links understood & awareness raised), "opportunistic effectiveness" (HIA done in support of proposal), or "no effectiveness".	**Limitations identified by author(s)**: Unrepresentative as only limited number of HIA studied, given the coverage. **Limitations identified by review team**: Case studies chosen for inclusion based on effectiveness as deemed by individual country researchers (not by authors). **Evidence gaps &/or recommendations for future research**: -HIA predictions need improving -Link sectors who are involved in decision-making. **Source of funding**: European Union Public Health Work Programme

+ **External validity score:** **++**					
	Country: Ireland **Setting** (eg urban/rural) Urban **Population**: (size , characteristics…) Four Air Quality Management Areas in Belfast.	**Plan**: Draft Air Quality Management Plan (AQMP) **Method of appraisal**: HIA	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: Y (iii) Evidence of being implemented: NR (iv) Post-adoption evaluation: NR *b) Specific issues:* (i) Physical activity: NR (ii) Mental wellbeing: NR (iii) Air / noise quality etc: Y (iv) Unintentional injury: NR (v) Other health: NR Specify: *c) Knowledge outcome:* Planners health knowledge or skills: NR *d) Other outcome*: Y Specify: - Improved working partnerships between different organisations	Belfast is a recognised WHO 'Healthy City'. The Council was one of the main drivers for the HIA and therefore this is a good example of the added value that HIA can offer in the development of plans or policies. The City Council was aware that measures proposed by other councils during the development of Air Quality Action Plans were not always effective and in some cases could actually contribute to negative impacts. **Effectiveness** **General:** it was too early to tell, as the process had not reached its conclusion, and made without access to all the facts, however overall the	

			- More response from community than for consultation on an AQMP	HIA had been useful and worthwhile, particularly in raising the profile of health.: "there was definitely a change from resistance to believing to accepting". Air Quality is easy to measure against standards set, but that monitoring is done annually and therefore it would take some time to establish clear trends. Also, attributing effect to specific causes within the complexity of air quality standards added to the overall challenge of assessing effectiveness. Benefit in bringing a health focus to the Action Plan, particularly through the community health profile, which presented relevant health statistics. **Equity:** "A lot of the measures in the Action Plan would have addressed air quality	

				generally but the HIA highlighted that the health in these 4 areas was worse anyway because of socio-economic disadvantage." **Community: This was mixed.** Those who reported direct effectiveness identified clear links between suggestions made at the community workshops and actions outlined in the final Action Plan. For other measures of effectiveness, there was a general view that the HIA had impacted positively on working partnerships between different organizations.	
	Country: NL **Setting** Leiden, urban **Population**: 118000 (size , characteristics **Equity:** lower incomes,	**Plan:** Plan for restructuring an industrial area into a residential area **Method of appraisal:** HIA – Health effect screening (= HIA rapid	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: Y Some but limited (iii) Evidence of being implemented: unclear	**Health Effectiveness: HIA had a general effect on health by increasing the consciousness of decision-makers** **Equity: no special mention to equity in**	**Limitations identified by author(s)**: HIA must be introduced clearly in the policy cycle to avoid making it another burden HIA should be integrated with other instruments

	people with mobility problems	appraisal)	(iv) Post-adoption evaluation: unclear *b) Specific issues:* (i) Physical activity: Y (ii) Mental wellbeing: Y (iii) Air / noise quality etc: Y (iv) Unintentional injury: unclear (v) Other health: N/R Specify: *c) Knowledge outcome:* Planners health knowledge or skills: N/R *d) Other outcome*: N/R Specify:	**HIA** **Community effectiveness: modest achievement, better relationship with local civil servants but passive involvement at later stages of decision-making** **HIA led to new thoughts on health promotion (eg physical activity), but little impact on health protection (eg polluted soil, air pollution)**	
	Country: Finland **Setting** (eg urban/rural) Urban, Jyväskylä **Population**:83000 in city and 6700 in Korteniitty (size , characteristics	**Plan: detailed local plan for Korteniitty** **Method of appraisal**: HIA and social impact= Prospective Participative social impact assessment	**Outcomes measured**: *a) Process outcomes:* (i) Health outcomes considered: Y (ii) Health recommendations incorporated in plan: Y (iii) Evidence of being implemented: unclear (iv) Post-adoption evaluation: unclear *b) Specific issues:* (i) Physical activity: Y (ii) Mental wellbeing: N/R (iii) Air / noise quality etc:	**SIA direct effects on the plan were difficult to distinguish:** **However SIA supported discussion, planning and decision-making Provided residents with information** **From plan summary report:** **Positive impact on various aspects**	**Limitations identified by review team**: **Too few interviews and no triangulation to g et a sufficient analysis**

			NA (iv) Unintentional injury: Y (v) Other health: N/R Specify: *c) Knowledge outcome:* Planners health knowledge or skills: Y *d) Other outcome*: N/R Specify:	**(bridges, buildings, playgrounds, day care...)** **But this is questioned by interviewee: who thought that SIA had no effect on the planning decision** **Health effectiveness: No strong evidence suggested that SIA had effect on health effectiveness** **Equity effectiveness: SIA had a direct effect as the plan was modified and adjusted accordingly (expanding school playing field), but this is contested by another interviewee** **Community effectiveness: contradictory evidence again here** **However change in culture and practice in SIA**	

Appendix I: Studies excluded at the full text stage

Author, year	Reason for exclusion (See inclusion & exclusion criteria at Appendix D)
Al-Damkhi et al (2008)	(EC) 2, 4 only recommendation to incorporate EIA into development projects
Alenius K. (2001)	(EC) 4 No primary data
Ali, S., O'Callaghan, V., Middleton, J. (2008)	(EC) 2
American Planning Association (2006)	(EC) 2 & 4
Ansah, L., et al (2006)	(EC) 2 & 3
Arenas, Jorge.P. (2008)	(EC) 4 Not an evaluation study (IC) 3 Was not met (comparison)
Aschemann, R. (2004)	(EC) 5
Ascher, N. (2001)	(EC) 2
Atkins Ltd for the Dept. of Transport (2009)	(EC) 3
Atkinson, P. et al (2005)	(EC) 2 Not a spatial planning process, however useful for R7
Bartlett School of Planning UCL (2003?)	(EC) 2, 4
Baviskar, A. & Kumar Singh, A. (1994)	(EC) 3
Birley, M. (2003)	(EC) 4
Birley, M.H. (1995)	(EC) 2,3,4,5 not met. Provides good methodological approach to HIA, and examples of likely health impacts in a range of development scenarios.
Birley, M. & Birley, V. (2007)	(EC) 2,4
Blau, G., & Mahoney, M. (2005)	(EC) 2 interesting for R3 as it got an analytical framework or barriers and opportunitie
Bond, A. et al for HDA (2005)	(EC) 5
Bronson, J. & Noble, B. (2006)	(EC) 2 but of interest as a review paper
Brown, A.L. & van Kamp, I. (2009)	(EC) 2, 3, 4
Burdge, R. (2003)	(EC) 4
Burnett, A. (2005)	(EC) 2 & 4
Burns, J. & Bond, A. (2008)	(EC) 4
CABE (2009)	(EC) 4
Cave, B. (2001) Vol 1	(EC) 2
Cave, B. & Curtis, S. ((2001)	(EC) 2 HIA is carried out by researchers themselves, not an evaluation of how an EIA/HIA has influenced plan/project

Church, C. & Wordsworth, C. forCIEH (2003)	(EC) 2, 3
Cook, A. & Kemm, J. (2004)	(EC) 2 Not a spatial planning issue- all to do with licensing
Coombe, D. et al (2001)	(EC) 4
Corvellec, H. And Boholm, A.	(EC) 4 Not an evaluation study (EC) 5 Health outcomes unreported (IC) 3 & 4 not met
Coulter, A. & Clegg, S. for BMRB Research(2009)	(EC) 3
CPRE (2007)	(EC) 2 & 3
CPRE (2008)	(EC) 2 & 3
Curtis, S et al (2002)	(EC) 2
Curtis, S., Cave, B. & Coutts, A. (2002)	(EC) 2 not a land use project
Daini, P. (2002)	(EC) 5
Davenport,C., et al (2006)	(EC) 2 valuable for background
Davies, A. Bristol City Council (2010)	(EC) 2, 3 & 4
Davis, S., et al (2009a)	(EC) 4
Davis, S., et al (December 2009b)	(EC) 4
DEFRA (2007)	(EC) 2, 3, 4 & 5
DEFRA (2008)	(EC) 2, 3 & 4
DEFRA (2009)	(EC) 3 & 4
DEFRA (2010)	(EC) 2 & 4
Defra/Enviros/Scott Wilson/Mark Hannan (2006)	(EC) 4
Demidova, O. & Cherp, A. (2005)	(EC) 4
Den Broeder, L. , Penris, M., &Put, G.V. (WHO bulletin) (2003)	(EC) 2
Design, Community & Environment (2006)	(EC)2, 3 & 4
Dilly,O. & Hüttl,R. (2009)	(EC) 4
Dom, Ann	(EC) 4
Dora, C. & Racioppi, F. (2003)	(EC) 4
Douglas, C (2004)	(EC) 2
Douglas, M et al (2003)	(EC) 4
Dube, P. (2000)	(IC) 2,3,4 not met (EC) 2,3,4,5 met
Du Pisani, J. & Sandham, L. (2006)	(EC) 4

Enviros (2004)	(EC) 2,3 & 4 Possible ok for cost benefit R7
Evans, B., & Coaffee, J. (?)	(EC) 4
Ezzati, M. (2003)	(EC) 2, 4
Fischer, T. (2009)	(EC) 2
Gagnon, F.et al (2008a)	(EC) 2,4,5
Gagnon, F. et al (2008b)	(EC) 2,4,5
Gorman, D. Et al (2003)	(EC) 2 (did not include an assessment or appraisal process of a plan or project. But did focus on policy)
Gorman, D. (2001)	(EC) 4
Greater Manchester Directors of Public Health (?)	(EC) 2 & 4
Greater London Authority (2007)	(EC) 4
Greater London Authority (2009)	(EC) 4
Guillois-Becel, Y. et al French paper for NICE (2007)	(EC) 2
Haigh, F.A. & Scott-Samuel, A. (2008)	(IC) 2 not met. Paper reports on policy evaluation
Hallenbeck, W.H. (1995)	(IC) 1234 met (EC) 4 (Not an evaluation study, no mention of the impact of the HIA on the decision).
Hamer, L. & Smithies, J. (2002)	(EC) 3 does not include evaluation of an appraisal tool
Harris, P. et al (2007)	(EC) 4 but check reference page 26
Harris, P.J., Harris,E., Thompson, S., Harris-Roxas,B. & Kemp, L. (2009)	(IC) 1,2,3,4 met (EC) 5 met Interesting background paper. Similar research question to ours, but not enough evidence reported on health outcomes, but reflects on inadequacies of HIA in EIA.
Haynes, R. & Savage, A. (2006)	(EC) 2
Higgins, M. et al (2005)	(EC) 4
Higman, R. & McLaren, D. (1993)	(EC) 4
Hirshfield, A. et al (2001)	(EC) 5 see p.109
Hoshiko, M. et al (2009)	(EC) 2
Ison, E. (2003)	(EC) 2, 4
Ison, E. (2007)	(EC) 4
Jacobs UK Ltd et al for Transport Scotland (2008)	(EC) 4
James, E. et al (2003)	(EC) 5

James, E. et al (2007?) for TRL and Dept. of Transport	(EC) 3 but good on NATA appraisal and what appraisals are required on different transport schemes pp.35-39
Kauppinen, T. et al (2006)	(EC) 4
Keir, C. & Matthews, R. (2006)	(EC) 5 HIA application to RES. Just about process/findings/outcomes. No indication if findings of HIA implemented in the RES
Kerney, M. (2003)	(EC) 2,3,4 not met. Paper reports on interviews undertaken before HIA, to get opinions on the best means of public engagement
Kjellstrom, T., et al (2003)	(EC) 2 No primary data reviewed
Kruopiene, J. et al (2008)	(EC) 5
Kwiatkowski, R. et al (2009)	(EC) 4
Lesowiec, H. ((2006)	(EC) 2 & 4
Leu, W-S., Williams, W.P. & Bark, A.W. (1996)	(EC) 4
Lewis,S.J. (2003)	(IC)2,3,4 not met (EC) 2, 4. Deals with migration, argued can obscure the benefits of a HIA, as the population benefit and move on, or people with poor health move in to benefit from the intervention. Thus, migration may be a confounding factor of HIA.
Lidskog, R. (1998)	(EC) 4
Lidskog, R. & Soneryd, L. (2000)	(EC) 5
London Borough of Barnet (draft 2008)	(EC) 2, 3, 4 & 5
MAFF (2000)	(EC) 2 & 4 Interesting report as it show how little concern is taken of health impacts as opposed to nature conservation etc
Mahony, C. (2003)	(EC) 4 not evaluative
Mahoney, M. et al, for HEIA (2004)	(EC) 2, 4, 5 R1 & R2 good background
Maki, A. (1992)	(EC) 1, 2
Mason, V. (2003)	(EC) 2 not policy (housing renewal) or project, case studies (p 343) some evaluation
Maxwell, M. Harris, P. Peters, S. Thornell, M & D'Souza,L. (2008)	(EC) 4 Keep paper as it has useful points at the end about the importance of on-going review of implementation, though too early to really assess effectiveness. (HB 29/01/10)
Mayor of London (Entec) (2004)	(EC) 4
Mayor of London (2007)	(EC) 2, 3, 4, & 5
Mayor of London (2009)	(EC) 2, 3, 4, & 5
Mayor of London (2009a)	(EC) 4

McCarthy,M. Et al (2002)	(EC) 2,4 & 5 met. (The report was based on a hypothetical development). (IC) 2,3 &4 missing
McCormick, J.	(EC) 5
Milner, S.J., Bailey, C. & Deans, J. (2002)	(EC) 2, 4 & 5
Mindell, J.S. et al (2008)	(EC) 2, 4
Mindell, J. & Joffe, M. (2003)	(EC) 4 compares HIA with other methods of assessment. Not an evaluation of a specific HIA but have some references been picked up?
MKSM (2009)	(EC) 2, 3 & 4
MKSM (17 July (?))	(EC) 2, 3 & 4
Murray, C. (2004)	(EC) 5
NHS London/HUDU (2008)	(EC) 2 & 3
NHS London/HUDU (2009)	(EC) 2 & 3
NHS London/HUDU for NHS Haringay (2009)	(EC) 4
Nijssen, J.P.J. et al (1998)	(EC) 2, 3 & 4
Noble,B. & Bronson, J. (2006)	(IC) 1,2,3, met 4 (EC) 4, 5 met
Noble, B. & Bronson, J. (2005)	(EC) 2, 4
Nouri, J., et al (2007)	(EC) 5
Office of the Deputy Prime Minister (2004)	(EC) 3
Parry, J. & Wright, J. (2003)	(EC) 2,4,5
Planning Advisory Service (2008)	(EC) 4 Note: One case study exluded from R1 on quality grounds, but a 2nd case study merited inclusion in R2.
Planning Advisory Service (2009)	(EC) 3
Persson, A & Nilsson, M. (2007)	(EC) 2 & 4
Petts, J., et al (1994)	(EC) 5
Prashar, A. (2000)	(EC) 4 no indication that HIA recommendations implemented
Public Health Advisory Committee (2008a)	(EC) 2, 3 & 4
Public Health Advisory Committee (2008b)	(EC) 2 & 3
Queensland Government (2005)	(EC) 4
Quigley, R. et al for HDA (2005)	(EC) 2

Quigley, R. et al for NICE(2005)	(EC) 4
Quigley, R. & Taylor, L. (2003)	(EC) 2, 3 & 4
Rakowski, C.A. (1995)	(IC)1 2 (EC) 4,5 (SIA proposed but not implemented)
Retief, F. (2007)	(EC) 2
Saarikoski, H. (2000)	(EC) 5
Salay, R. & Lincoln, P. (2008)	(EC) 2,3,4,5 useful background/legislation in EU
Scharf, T., et al (2002)	(EC) 2 & 4
Schmidtbauer, C., Antonson, H., Blomqvist, G. & Folkeson, L (2003)	(EC) 6 Full text would be in Swedish
Scott, D. (1999)	(EC) 5
Shergold, I. & Parkhurst, G. for Centre for Transport & Society, UWE (2009)	(EC) 3
Simpson,S, Mahoney,M., Harris,E. Aldrich,R. & Stewart-Williams, J. (2005)	(IC) 2 not met, all case studies are policy interventions, e.g. breastfeeding strategies.
Snary, C. (2002)	(IC) 3,4 not met (EC)4, 5 met
St-Pierre, L. for Canadian Round Table on HIA (2008)	(EC) 2,4,5
Stergiadou, A.G. (2007	(IC)1 2 (EC) 4,5
Storey, K and Jones, P. (2003)	(IC) 4 not met (EC) 5 met
Tan, R. & Khoo, H. (2006)	(EC) 3
Tang, B. et al (2008)	(EC) 5
Taylor, I., & Sloman, L. (2008)	(EC) 2, 3 &4
Taylor, L., et al (2002)	(EC) 2 no primary data reviewed
Taylor, L., Gowman, N., Quigley, R. for HDA (2003)	(EC) 4
Taylor, L. et al (2003a)	(EC) 2, 4
Thomson, H, Jepson, R., Hurley, F. & Douglas,M. (2008)	(EC) 2 no primary data reviewed
Thomson, H, Petticrew, M. & Douglas,M. (2003)	(EC) 4,5
Thriene, B. (2003)	(EC) 6

Tomlinson, P. & James, E. (date unknown)	(EC) 2, 3, 4
Tortajada, C. (2000)	(EC) 8 Little primary data or detail about projects
Transport, Health & Environment Pan-European Programme for WHO regional office for Europe (2009)	(EC) 2, 3, 4
Trussart, S et al (2002)	(IC) 2,3,4 not met (EC) 2,3,4,5 met
UCL & Deloitte (2007)	(EC) 3, 4, 5
University of Manchester & Land Use Consultants	(EC) 2, 4, 5
Van Buuren, A. & Nooteboom, S. (2009)	(EC) 5
Vanclay, F & Bronstein, D. Eds (1995)	(EC) 2, 5
Veerman, J., et al (2005)	(EC) 2 no primary data reviewed
Veerman, J., Barendregt, J. & Mackenbach, J. (2005)	(EC) 4
Von Schirnding, Y. & Yach, D. (1991/2)	(EC) 2
Winkler, M., et al (2010)	(IC) 2 not met (EC) 2 & 4 not part of planning regulatory process/ not evaluation of process
Waltham Forest BC (2009)	(EC) 3, 4
Washburn et al (1989)	(EC) 2
WHO Task Force on Research Priorities for Equity in Health & the WHO Equity team(2005)	(EC) 2
WHO Protection of the Human Environment Geneva (2000)	(EC) 2, 3
WHO CEMP (1992)	(EC) 2
Wiek, A. & Binder, C. (2005)	(EC) 2, 4
Wilson, S. (2008)	(EC) 4
Wood, G. (1999)	(EC) 4
Wright, J., Parry, J. & Mathers, J. for WHO (2005)	(EC) 4, 5
Wright, J. et al (2005)	(EC) 2 useful for R5/R6?
York Health Economics Consortium (2006)	(EC) 5
Zamarano, M. Et al (2008)	(EC) 2

Appendix J: Abstracts of studies written in languages other than English

Thriene,B.(2003) *Garbage incineration plants -- planning, organisation and operation from health point of view*. Gesundheitswesen. Vol 65 [2] 118-124.

Abstract.

The Waste Disposal Regulation which became effective March 1, 2001 stipulates that from June 1, 2005 biodegradable residential household and commercial waste may only be deposited on landfills after thermal or mechanical-biological pre-treatment. The Regulation aims at preventing generation of landfill gases that are detrimental to health and climate, and discharge of pollutants from landfills into the groundwater. Waste calculations for the year 2005 predict a volume of 28 million tons. Existing incineration and mechanical-biological treatment plants cover volumes of 14 and 2.5 million tons, respectively. Consequently, their capacity does not meet the demand in Germany. Waste disposal plans have been prepared in the German Federal State of Saxony-Anhalt since 1996 and potential sites for garbage incineration plants have been identified. Energy and waste management companies have initiated application procedures for thermal waste treatment plants and utilization of energy. Health Departments and the Hygiene Institute contributed to the approval procedure by providing the required Health Impact Assessment. We recommended selecting sites in the vicinity of large cities and conurbations and - taking into account the main wind direction - preferably in the northeast. Long-distance transport should be avoided. Based on immission forecasts for territorial background pollution, additional noise and air pollution were examined for reasonableness. In addition, providing structural safety of plants and guaranteeing continuous monitoring of emission limit values of air pollutants, was a prerequisite for strict observance of the 17 (th) BImSchV (Federal Decree on the Prevention of Immissions). The paper informs about planning, construction and conditions for operating the combined garbage heating and power station in Magdeburg-Rothensee (600,000 t/a). Saxony-Anhalt's waste legislation requires non-recyclable waste to be disposed of at the place of its generation, if possible, and utilized as a renewable energy source. This requirement is satisfied in this location. The potential health hazard for residents living in the impact radius is rated low.

Authors: REINIKAINEN, K; KARJALAINEN,T P; TALVENHEIMO,K
Title: *Evaluation of human impacts in road projects* (Ihmisiin kohdistuvien vaikutusten arviointi tiehankkeissa).
Periodical, Full: TIEHALLINNON SELVITYKSIA, FINNRA REPORTS
Pub Year: 2003
Issue: 20/2003(TIEH 3200808) pp42p+app(12

Abstract:
The Finnish Road Administration has applied the environmental impact assessment (EIA) procedure in 35 road and bridge projects altogether, both before and after the Environmental Impact Assessment Act came into force (1994). Evaluation of human impacts has been carried out more and more frequently in the projects. Although human impact assessment is an essential part of the environmental impact assessment procedure, it still needs

development and improved skills on the part of both the evaluators and their clients. This report aims at serving development of road project impact evaluation by surveying the status of human impact assessment in the evaluation reports that have been made. The report is expected to function as a tool for mutual exchange of experiences and for the internal learning process in the Road Administration. The report introduces issues that should be given special attention in further development of and training for impact assessment. Chapter 2 of the report describes the human impacts evident in the evaluation reports as well as ways to classify them. Chapter 3 discusses the methods used to assess impacts. Chapter 4 looks into interaction as it has been realised in the process. The contribution of participation to the process is also analysed. Chapter 5 provides conclusions on the basis of the information yielded by the status survey. The general nature of the evaluation reports can be roughly divided into three so far as the human impacts are concerned: 1. the stage of novelty and pilot cases, when the human impacts were also assessed searching for a practical model for implementation, 2. the stage of increased stability and routine, with less weight given to human impacts than in the initial stage, and significant differences were evident in the reports in this respect, and 3. the most recent stage of assessment, which puts the focus on an effort at interaction.
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Authors: SCHMIDTBAUER,CRONA,J.; ANTONSON,H.; FOLKESON,L.; BLOMQVIST,G.; BALFORS,B. *Were the results as intended?: An international overview of knowledge about environmental follow-ups of road and railway projects* (Blev det som det var taenkt?: en internationell kunskapsoeversikt om miljoeuppfoljning av vaeg- och jaernvaegsprojekt).
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Abstract: "Were the results as intended?" The question encapsulates the main purpose of environmental follow-ups of road and railway projects. Documenting how far the real environmental effects and consequences agree with those that were described in the environmental impact assessment (EIA) is the main purpose of an environmental follow-up. Another of its purposes is to identify unforeseen effects and consequences, so that appropriate countermeasures can be taken. Describing the extent to which any adaptive or mitigation measures had the desired effect may be yet a further purpose of making an environmental follow-up. An environmental follow-up can also aim to describe whether the environmental consequences of the infrastructure project was kept within the framework laid down at the time the investment decision was made. This overview reports how an EIA follow-up is organised and carried out in other countries, principally Norway, the Netherlands, Germany, Switzerland, the USA, Canada, Brazil, Australia, New Zealand and Hong Kong. Procedures are presented for selecting infrastructure projects to follow up, together with the environmental effects that are to be followed up. The importance of clarifying the purpose of the follow-up is emphasised, as is the importance of the follow-up activities being carried out according to a defined programme. Among other things, the follow-up programme describes the various responsibilities, access to baseline data, the timing of the follow-up, the methods to be used, and how the results are to be reported and used. The overview also examines the linkage of the follow-up to an environmental management system. Examples are also given of a method known as adaptive environmental management. Finally, the review looks at how experience gained from follow-

ups can be disseminated and transferred to the planning of future infrastructure projects. The review shows that inspiration for more effective approaches and methodology for EIA follow-ups in the road and railway sector can also be sought in experience from follow-ups in other sectors. (A) This document is also available electronically via Internet at URL: http://www.vti.se/PDF/reports/M942.pdf.
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Abstract: According to current regulations, major projects are subject to an environmental impact assessment. Within this framework, not only ecological criteria have to be met, but also the possible health impact for the exposed population must assessed. In the absence of limit values for carcinogenic substances in the air, the health impact assessment can be based on quantitative risk assessment. This technology was formerly developed for the assessment of cancer risk imposed by existing environmental exposures, but it is also suitable for the prediction of future exposures and their health consequences. This is demonstrated by using a planned toxic waste incinerator as a model.

Appendix K: References not obtained/arrived too late

The following list incorporates the references that could not be sourced through inter library loans, that were untraceable due to incomplete citations, or that arrived too late to be screened:

1. American Planning Association (2006) *Health Impact Assessment.* American Planning Association PAS Report

2. American Planning Association (2006) *Planning Active Communities* American Planning Association PAS Report
   NOTE: Not available from sources in UK

3. Anderson, R., Brand, C., Joffe, M., Watkiss, P., Hurley, F., Pilkinton, A., Mindell, J. (2000) *Informing Transport Health Impact Assessment in London*. NHSE

4. O'Keefe, E., Scott-Samuel, A. (date unknown) *Health impact assessment as an accountability mechanism for the International Monetary Fund: the case of Sub-Saharan Africa.* International Journal of Health Services, 40(2), 339-345

5. Will, S., Aardern, K., Spencely, M., Watkins, S. (1994) *A Prospective Health Impact Assessment of the ?.* Manchester & Stockport Health Commission