Labouring with large stones: A study into the investment and impact of construction projects on Mycenaean communities in Late Bronze Age Greece

Boswinkel, Y.

Bibliography

Abrams, E. M. (1987). Economic Specialization and Construction Personnel in Classic Period Copan , Honduras. *American Antiquity*, *52*(3), 485–499.

Abrams, E. M. (1994). *How the Maya Built Their World: Energetics and Architecture.* Austin: University of Texas Press.

Abrams, E. M., & Bolland, T. W. (1999). Architectural Energetics, Ancient Monuments, and Operations Management. *Journal of Archaeological Method and Theory*, *6*(4), 263–291. https://doi.org/10.1023/a:1021921513937

Abrams, E. M., & McCurdy, L. (2019). *Architectural Energetcis in Archaeology. Analytical Expansions on Global Explorations*. Oxfordshire: Routledge.

Akinbamijo, O. O., Pearson, R. A., & Fall, A. (2003). Management strategies for trypanotolerant draught animals in West Africa. In R. A. Pearson, P. Lhoste, M. Saastamoinen, & W. Martin-Rosset (Eds.), *Working animals in agriculture and transport. A collection of some current research and development observations.* (pp. 113–122). Wageningen: Wageningen Academic Publishers.

Alden, M. J. (1981). *Bronze age population fluctuations in the Argolid from the evidence of Mycenaean tombs.* Göteborg: Paul Aströms Förlag.

Allan, W. (1965). *The African husbandman*. London: Oliver & Boyd.

Andrews, E. B. (1877). Report of explorations of mounds in southeastern Ohio. *Tenth Annual Report of the Trustees of the Peabody Museam of American Archaeology and Ethnology.*, *11*(1), 51–74.

Antonaccio, C. (2016). Iron Age Reciprocity. *Journal of Mediterranean Archaeology*, *29*(1), 104–111. https://doi.org/10.1558/jmea.v29i1.31049

Aprile, J. D. (2013). Crafts , Specialists , and Markets in Mycenaean Greece. The New Political Economy of Nichoria : Using Intrasite Distributional Data to Investigate Regional Institutions. *American Journal of Archaeology*, *117*(3), 429–436.

Arena, E. (2015). Mycenaean peripheries during the palatial age. The case of Achaia. *Hesperia*, *84*, 1–46.

Arnold, D. (1991). *Bulding in Egypt: pharaonic stone masonry.* New York: Oxford University Press.

Atkinson, R. J. C. (1960). *Stonehenge*. Harmondsworth: Pinquin Books Ltd.

Atkinson, R. J. C. (1961). Neolithic Engineering. *Antiquity. A Quarterly Review of Archaeology*, *35*, 292–299.

Bachhuber, C. (2006). Aegean Interest on the Uluburun Ship. *American Journal of Archaeology, 110,* 345-63

Barwell, I., & Ayre, M. (1982). *The harnessing of draught animals*. Retrieved from https://doi.org/10.3362/9781780444376

Bendall, L. M. (2003). A Reconsideration of the Northeastern Building at Pylos : Evidence for a Mycenaean Redistributive Center. *American Journal of Archaeology*, *107*(2), 181–231.

Bendall, L. M. (2007). *Economics of religion in the Mycenaean world: resources dedicated to religion in the Mycenaean palace economy.* Oxford: Oxford University School of Archaeology.

Bennet, J. (2007). The Aegean Bronze Age. In W. Scheidel, I. Morris, & R. Saller (Eds.), *The Cambridge Economic History of the Greco-Roman World. Part II - Early Mediterranean Economies and the Near East.* (pp. 173–210). Cambridge: Cambridge University Press.

Bennet, J. (2013). Bronze Age Greece. *The Oxford Handbook of the State in the Ancient Near East and Mediterranean*, (December), 1–17. https://doi.org/10.1093/oxfordhb/9780195188318.013.0009

Bintliff, J. L. (1977). *Natural Environment and Human Settlement in Prehistoric Greece*. Oxford: BAR.

Bintliff, J. L. (1985). The Development of Settlement in South-West Boeotia. *Colloques Internationaux Du CNRS: "La Béotie Antique," i*, 49–70.

Bintliff, J. L. (1989). Cemetery populations, carrying capacity and the individual in history. In C. A. Roberts, F. Lee, & J. L. Bintliff (Eds.), *Burial archaeology, current research, methods and developments* (pp. 85–104). Oxford: BAR.

Bintliff, J. L. (2012). *The Complete Archaeology of Greece. From Hunter-Gatherers to the 20th Century AD*. Oxford: Wiley-Blackwell.

Bintliff, J. L. (2019). Natrual and Human Ecology: Geogrpahy, Climate and Demography. In I. S. Lemos & A. Kotsonas (Eds.), *A Companion to the Archaeology of Early Greece and the Mediterranean* (pp. 3–32). Hoboken: John Wiley & Sons, Inc.

Blackwell, N. G. (2011). Middle and Late Bronze Age Metal Tools from the Aegean, Eastern Mediterranean, and Anatolia: Implications for Cultural/Regional Interaction and Craftsmanship (Bryn Mawr College). Retrieved from http://search.proquest.com/docview/907550591?accountid=14553%5Cnhttp://openurl.library.uiuc.edu/sfxlcl3?url_ver=Z39.88-2004&rft_val_fmt=info:ofi/fmt:kev:mtx:dissertation&genre=dissertations+&+theses&sid=ProQ:ProQuest+Dissertations+&+Theses+Full+Text&atitl

Blackwell, N. G. (2014). Making the Lion Gate Relief at Mycenae: Tool Marks and Foreign Influence. *American Journal of Archaeology*, *118*(3), 451. https://doi.org/10.3764/aja.118.3.0451

Blau, P. J. (2001). The significance and use of the friction coefficient. *Tribology International*, *34*(9), 585–591. https://doi.org/10.1016/S0301-679X(01)00050-0

Bobobee, E. (2007). *Performance analysis of draught animal-implement system to improve productivity and welfare Performance Analysis of Draught Animal-Implement System to Improve Productivity and Welfare Emmanuel Y . H . Bobobee Department of Biometry and Engineering Swedish*. Swedish University of Agricultural Sciences.

Boethius, C. A. (1921). Hellenistic Mycenae. *The Annual of the British School at Athens*, *XXV*, 408–429.

Bogaard, A., Charles, M., Twiss, K. C., Yalman, N., Filipovi, D., Demirergi, G. A., … Henecke, J. (2009). Private pantries and celebrated surplus : storing and sharing food at Neolithic uk , Central Anatolia. *Antiquity*, *83*, 649–668.

Boswinkel, Y. (2018). Interpreting architecture from a survey context: recognising monumental structures. In A. N. Brysbaert, M. V. Klinkenberg, A. Gutiérrez Garcia, & I. Vikatou (Eds.), *Constructing monuments, perceiving monumentality and the economics of building: Theoretical and methodological approaches to the built environment* (pp. 105–116). Leiden: Sidestone Press.

Broneer, O. (1939). A Mycenaean Fountain on the Athenian Acropolis. *Hesperia*, *8*(4), 317–433. https://doi.org/10.2307/146495

Broodbank, C. (2013). *The making of the Middle Sea: a history of the Mediterranean from the beginning to the emergence of the Classical world*. Oxford: Oxford University Press.

Brunke, H., Bukowiecki, E., Cancik-Kirschbaum, E., Eichmann, R., van Ess, M., Gass, A., Ziemssen, H. (2016). Thinking Big. Research in Monumental Constructions in Antiquity. *ETopoi: Journal for Ancient Studies*, *6*(Special volum, Space and Knowledge), 250–305.

Brysbaert, A. (2013). Set in Stone? Socio-Economic Reflections on Human and Animal Resources in Moumental Architecture of Late Bronze Age Tiryns in the Argos Plain, Greece. *ARCTOS*, *XLVII*, 49–98.

Brysbaert, A. (2015a). Set in Stone? Constructed symbolism viewed through an architectural energetics ' lens at Bronze Age Tiryns , Greece. *Analecta Praehistorica Leidensia*, *45*, 91–105.

Brysbaert, A. (2015b). Set in Stone? Technical, socio-economic and symbolic considerations in the consruction of the Cyclopean-style walls of the Late Bronze Age Citadel at Tiryns, Greece. *Analecta Praehistorica Leidensia*, *45*, 69–90.

Brysbaert, A. (2016). A tale of technologies: constructing monuments and perceiving monumentality. *Melbourne Historical Journal*, *43*(2), 1–30.

Brysbaert, A. (2017). SETinSTONE: an impact assessment of the human and environmental resource requirements of Late Bronze Age Mycenaean monumental architecture. *Antiquity*, *91*(358), 1–7. https://doi.org/10.15184/aqy.2017.121

Brysbaert, A. (2018). Constructing monuments, perceiving monumentality: introduction. In A. Brysbaert, V. Klinkenberg, A. Gutiérrez Garcia-M, & I. Vikatou (Eds.), *Constructing monuments, perceiving monumentality and the economics of building: Theoretical and methodological approaches to the built environment* (pp. 21–48). Leiden: Sidestone Press.

Brysbaert, A. (2021). Mobility and labour efforts along prehistoric roads and Least Cost Paths in the Argolid, Greece. In S.W. Manning (ed), *Critical Approaches to Mediterranean Archaeology.* London: Equinox.

Brysbaert, A., Klinkenberg, V., Boswinkel, Y., Turner, D. R., Timonen, R. E., Stöger, H., & Sioumpara, E. P. (2018). SETinSTONE? A retrospective impact assessment of human and environmental resource usage in Late Bronze Age Mycenaean monumental architecture. *Tijdschrift Voor Mediterrane Archeologie*, *58*, 21–29.

Brysbaert, A., Vikatou, I., Timonen, R., Klinkenberg, V., & Stöger, H. (2019). Beyond dots on the map: highways and byways connecting people and their monumental and environmental surroundings in Mycenaean Greece. *Arctos*.

Burford, A. (1960). Heavy Transport in Classical Antiquity. *The Economic History Review*, *13*(1), 1–18. https://doi.org/10.1111/j.1468-0289.1960.tb00025.x

Burford, A. (1963). The Builders of the Parthenon. *Greece & Rome*, *10*(Parthenos and Parthenon), 23–35.

Burford, A. (1969). *The Greek Temple Builders at Epidauros. A social and economic study of building in the Asklepian sanctuary, during the fourth and early third centuries B.C.* Liverpool: Liverpool University Press.

Burns, B. E. (2007). Life outside a Mycenaean palace: elite houses on the periphery of citadel sites. In R. Westgate, N. Fisher, & J. Whitley (Eds.), *Building Communities: house, settlement and society in the Aegean and beyond. Proceedings of a Conference held at Cardiff University, 17-21 April 2001* (pp. 111–119). Athens: British School at Athens.

Burns, B. E. (2010). *Mycenaean Greece, Mediterranean Commerce and the Formation of Identity*. Cambridge: Cambridge University Press.

Burns, B. E. (2016). The Rhetoric of Reciprocity in Late Bronze Age Mediterranean Exchange. *Journal of Mediterranean Archaeology*, *29*(1), 88–94. https://doi.org/10.1558/jmea.v29i1.31047

Carothers, J., & McDonald, W. A. (1979). Size and Distribution of the Population in Late Bronze Age Messenia: Some Statistical Approaches. *Journal of Field Archaeology*, *6*(4), 433–454. https://doi.org/10.2307/529426

Carpenters, The. (1970). Close to you (song). In *Close to you* (album).

Casselberry, S. E. (1974). Further refinement of formulae for determining population from the floor area. *World Archaeology*, *6*(1), 117–122.

Cavanagh, W. G. (2008). Death and the Mycenaeans. In C. W. Shelmerdine (Ed.), *The Cambridge companion to the Aegean Bronze Age* (pp. 327–341). Cambridge: Cambridge University Press.

Cavanagh, W. G., & Laxton, R. R. (1981). The Structural Mechanics of the Mycenaean Tholos Tomb. *The Annual of the British School at Athens*, *76*, 109–140.

Cavanagh, W. G., & Mee, C. (1999). Building the Treasurey of Atreus. In P. P. Betancourt, V. Karageorghis, R. Laffineur, & W. D. Niemeier (Eds.), *MELEMETA: Studies in Aegean Archaeology Presented to Malcolm H. Wiener as He Enters his 65th Year* (pp. 93–103). Liége: Peeters.

Chadwick, J. (1972). The Mycenaean Documents. In W. A. McDonald & G. R. Rapp Jr. (Eds.), *The Minnesota Messania Expedition. Reconstructing a Bronze Age Regional Environment* (pp. 100–116). Minneapolis: University of Minnesota Press.

Chadwick, J. (1987). The Muster of the Pylian Fleet. In P. H. Ilievski & L. Crepajac (Eds.), *Tractata Mycenaea : proceedings of the Eighth International Colloquium on Mycenaean Studies, held in Ohrid, 15-20 September 1985* (pp. 75–84). Skopje: macedonian Academy of Sciences and Arts.

Cherry, J. F., & Davis, J. L. (2001). Under the Sceptre of Agamemnon: The View from the hinterlands of Mycenae. In K. Branigan (Ed.), *Urbanism in the Aegean Bronze Age* (pp. 143–161). Sheffield.

Childe, V. G. (1954). Rotary Motion. In C. Singer (Ed.), *History of Technology I1* (pp. 187–215). Oxford: Clarendon Press.

Clark, D. K. (1878). *Manual of rules, tables and data for mechanical engineers.* London: Blackie and Sons.

Cole, S. M. (1954). Land transport without wheels, roads and bridges. In C. Singer, E. J. Holmyard, & A. R. Hall (Eds.), *A History of Technology* (pp. 704–715). Oxford: Clarendon Press.

Cook, S. F., & Heizer, R. F. (1968). Relationships among Houses, Settlement Areas, and Population in Aboriginal California. In K. C. Chang (Ed.), *Settlement Archaeology* (pp. 79–116). Palo Alto: National Press Books.

Cotterell, B., & Kamminga, J. (1990). *Mechanics of pre-industrial technology*. Cambridge: Press Syndicate of the University of Cambridge.

Coulton, J. J. (1977). *Greek Architects at Work. Problems of Structure and Design.* Southampton: The Camelot Press Ltd.

Crouwel, J. H. (1981). *Chariots and other means of land transportation in Bronze Age Greece*. Amsterdam: Allard Pierson Museum.

D'Altroy, T. N., & Earle, T. K. (1985). Staple Finance, Wealth Finance, and Storage in the Inka Political Economy. *Current Anthropology*, *26*, 187–206.

Dabney, M. K., & Wright, J. C. (1990). Mortuary Customs, Palatial Society and State Formation in the Aegean Area: A Comparative Study. In R. Hägg & G. C. Nordquist (Eds.), *Celebrations of Death and Divinity in the Bronze Age Argolid* (pp. 45–53). Stockholm: Paul Aströms Förlag, Göteborg.

de Haan, H. J. (2009). Building the great pyramid by levering a mathematical model. *PalArch's Journal of Archaeology of Egypt*, *6*(2), 1–22.

de Haan, H. J. (2010). *The large Egyptian pyramids: modelling a complex engineering project.* Oxford: Archaeopress.

de Haan, H. J. (2014). More insight from physics into the construction of the Egyptian pyramids. *Archaeometry*, *56*(1), 145–174. https://doi.org/10.1111/j.1475-4754.2012.00726.x

Deger-Jalkotzy, S. (1996). On the Negative Aspects of the Mycenaean Palace System. In E. De Miro, L. Godart, & A. Sacconi (Eds.), *Atti e Memorie del Secondo Congresso Internatzionale di Micenologia: Roma-Napoli, 14-20 ottobre 1991.* (pp. 715–728). Rome: Gruppo Editoriale Internazionale.

Deger-Jalkotzy, S. (2008). Decline, Destruction, Aftermath. In Cynthia W. Shelmerdine (Ed.), *The Cambridge companion to the Aegean Bronze Age* (pp. 387–415). Cambridge: Cambridge University Press.

DeLaine, J. (1997). *The Baths of Caracalla: a study in the design, construction, and economics of large-scale building projects in imperial Rome.* Portsmouth: Journal of Roman archaeology.

Demakopoulou, K. (2015). The Mycenaean Acropolis of Midea. New discoveries and new interpretations. In A.-L. Schallin & I. Tournavitou (Eds.), *Mycenaeans up to date. The archaeology of the north-eastern Peloponnese - current concepts and new directions* (pp. 185–196). Stockholm: Svenska Institutet i Athen.

Demakopoulou, K., Divari-Valakou, N., Nilsson, M., & Schallin, A.-L. (2009). Excavations in Midea 2007. *Opuscula*, *2*, 7–30.

Devolder, M. (2013). *Construire en Crete Minoenne. Une Approche Énergetique de L'Architecture Néopalatiale* (Aegaeum 35). Leuven: Peeters.

Devolder, M. (2015). Manpower and Neopalatial Architecture. The Architectural Project as a Meaningful Experience. In S. Cappel, U. Günkel-Maschek, & D. Panagiotopoulos (Eds.), *Minoan Archaeology: Perspectives for the 21st Century* (pp. 241–252). Retrieved from http://pul.uclouvain.be/en/livre/?GCOI=29303100264630

Dickinson, O. (2010). The Collapse at the End of the Bronze Age. In E. H. Cline (Ed.), *Oxford Handbook to Aegean Bronze Age.* (pp. 483–491). Oxford: Oxford University Press.

Drennan, R. D., Berrey, C. A., & Peterson, C. E. (2015). *Regional settlement demography in archaeology*. Clinton Corners: Eliot Werner Publications, Inc.

Dworakowska, A. (1975). *Quarries in ancient Greece*. Wroclaw: Wroclawska Drukarnia Naukowa.

Earle, T. K. (2002). *Bronze Age economics: the beginnings of political economies*. Boulder: Westview Press.

Earle, T. K. (2011). Redistribution in Aegean Palatial Societies Redistribution and the Political Economy : The Evolution of an Idea. *American Journal of Archaeology*, *115*(2), 237–244.

Eastons, & Anderson. (1874). Horse dynamometer employed by the royal agricultural society at Bedford. *The Engineer*, *38*, 22–25.

Eder, B. (2003). Patterns of contact and communication between the regions south and north of the Corinthian Gulf in LH IIIC. In N. Kyparissi-Apostolika & M. Papakonstantinou (Eds.), *2nd International interdisciplinary colloquium. The Peripherey of the Mycenaean World 26-30 September, Lamia 1999* (pp. 37–54). Athens.

Eder, B., & Jung, R. (2005). On the character of social relations between Greece and Italy in the 12th/11th C. BC. In R. Laffineur & E. Greco (Eds.), *Emporia. Aegeans in the Central and Eastern Mediterranean* (pp. 485–495). Liége: Université de Liége.

Eder, B., & Jung, R. (2013). Unus pro omnibus, omnes pro uno: The Mycenaean Palace System. In J. Weilhartner & F. Ruppenstein (Eds.), *Tradition and Innovation in the Mycenaean Palatial Polities* (pp. 113–140). Vienna: Austrian Academy of Sciences.

Eiteljorg, H. (2008). *Archaeological Computing.* Bryn Mwar: Centre for the study of architecture.

El-Hakim, S., Beraldin, J. A., Remondino, F., Picard, M., Cournoyer, L., & Baltsavias, E. (2008). Using terrestrial laser scanning and digital images for the 3D modelling of the Erechteion, Acropolis of Athens. *DMACH Conference Proceedings, Amman, Jordan*, (November), 3–16.

Erasmus, C. J. (1965). Monument Building: Some Field Experiments. *Southwest Journal of Anthropology*, *21*, 277–301.

Erwich, B., & Vliegen, M. (2001). Bebouwing en bevolking. *Nederland Regionaal*, *5*, 22–23.

Evely, R. D. G. (1993). *Minoan crafts: tools and techniques. An Introduction. Studies in Mediterranean Archaeology vol. XCII:1*. Göteborg: Paul Aströms Förlag.

Fall, A., Weber, B., Pakpour, M., Lenoir, N., Shahidzadeh, N., Fiscina, J., … Bonn, D. (2014). Sliding friction on wet and dry sand. *Physical Review Letters*, *112*(17), 3–6. https://doi.org/10.1103/PhysRevLett.112.175502

Fant, J. C. (2010). Quarrying and Stoneworking. In J. P. Oleson (Ed.), *The Oxford Handbook of Engineering and Technology in the Classical World* (pp. 121–135). https://doi.org/10.1093/oxfordhb/9780199734856.013.0006

Feinman, G. M. (2013). Crafts, Specialists, and Markets in Mycenaean Greece. Reenvisioning Ancient Economies : Beyond Typological Constructs. *American Journal of Archaeology*, *117*(3), 453–459.

Fisher, K. D. (2007). *Building Power: Monumental Architecture, Place and Social Interaction in Late Bronze Age Cyprus*. University of Toronto.

Fisher, K. D. (2014). The creation and experience of monumentality on protohistoric Cyprus. In J. F. Osborne (Ed.), *Approaching Monumentality in Archaeology* (pp. 355–383). Albany: State University of New York Press.

Fitzsimons, R. D. (2006). *Monuments of Power and the Power of Monuments the Evolution of Elite Architectural Styles at Bronze Age Mycenae*. University of Cincinnati.

Fitzsimons, R. D. (2011). Monumental architecture and the construction of the Mycenaean state. In N. Terrenato & D. C. Haggis (Eds.), *State Formation in Italy and Greece: Questioning the Neo-evolutionist Paradigm* (pp. 75–118). Oxford: Oxbow Books.

Fotou, V. (2016). Calculating the Manpower Requirements for the Construction of Neopalatial Buildings in Crete: Pitfalls, Challenges and Possibilities. *Aegean Studies*, *1*, 57–81.

Foucault, M. (1977). *Discipline and punish. The birth of the prison.* Paris: Editions Gallimard.

French, E. (2002). *Mycenae: Agamemnon's capital: the site and its setting*. Stroud: Tempus Publishing Ltd.

Galaty, M. L., Nakassis, D., & Parkinson, W. A. (2016). Discussion and Debate : Reciprocity in Aegean Palatial Societies : Gifts , Debt , and the Foundations of Economic Exchange. *Journal of Mediterranean Archaeology*, *29*(1), 61–132.

Galaty, M. L., & Parkinson, W. A. (2007). 2007 Introduction: Mycenaean Palaces Rethought. In M. L. Galaty & W. A. Parkinson (Eds.), *Rethinking Mycenaean Palaces II* (pp. 21–28). Los Angeles: Cotsen Institute of Archaeology.

Gallant, T. W. (1991). *Risk and survival in ancient Greece: reconstructing the rural domestic economy*. Cambridge: Polity Press.

Gazis, M. (2010). Η Προίστορικη Ακροπολη του Τειχους Δυμαιων. Σε Αναζητηση Ταυτοτητας. In N. Μερουστης, Ε. Στεφανή, & Μ. Νιχολαίδου (Eds.), *Ιρις. Μελέτες στη μνήμη της χαθηγήτριας Αγγελιχής Πιλάλη-Παπαστερίου* (pp. 237–255). Thessaloniki: Εχδόσεισ Κορηνλία Σφαχιανάχη.

Gazis, M. (2017). Teichos Dymaion, Achaea. An acropolis-harbour of the Ionian sea looking westwards. In M. Fotiadis, R. Laffineur, Y. Lolos, & A. Vlachopoulos (Eds.), *The Aegean seen from the West. Proceedings of the 16th International Aegean Conference, University of Ioannina, department of History and Archaeology, Unit of Archaeology and Art History, 18-21 May 2016* (pp. 463–471). Leuven: Peeters.

Giannopoulos, T. G. (2008). *Die letzte Elite der mykenischen Welt. Achaia in mykenischer Zeit und das Phänomen der Kriegerbestattungen im 12.-11. Jahrhundert v. Chr.* Bonn: Dr. Rudolf Habelt GmbH.

Goe, M. R., & McDowell, R. E. (1980). *Animal Traction : Giudlines for Utilization*. Ithaca: Cornell University Press.

Groh, S. (2012). Strategies and results of the urban survey in the upper city of Ephesus. In F. Vermeulen, G. Burgers, S. Keay, & C. Corsi (Eds.), *Urban landscape survey in Italy and the Mediterranean* (pp. 62–71). Oxford: Oxbow Books.

Grossmann, P. (1967). Zur Unterburgmauer von Tiryns. *Archäologischer Anzeiger*, *82*, 92–101.

Grossmann, P. (1980). Arbeiten an der Unterburgmauer von Tiryns in den Jahren 1969, 1971 und 1972. *Archäologischer Anzeiger*.

Haagsma, M. J. (2003). The Houses of New Halos. In H. R. Reinders & W. Prummel (Eds.), *Housing in New Halos. A Hellenistic Town in Thessaly, Greece.* (pp. 37–80). Lisse: Swets & Zeitlinger BC.

Halstead, P. (1987). Traditional and ancient rural economy in Mediterranean Europe: plus ça change?

The Journal of Hellenic Studies, *107*(1987), 77–87. https://doi.org/10.2307/630071

Halstead, P. (1989). The economy has a normal surplus: economic stability and social change among early farming communities of Thessaly, Greece. In *Bad Year Economics: Cultural Responses to Risk and Uncertainty* (pp. 68–80). https://doi.org/10.1017/cbo9780511521218.006

Halstead, P. (1992). The Mycenaean Palatial Economy: Making the most of the gaps in the evidence. *Proceedings of the Cambridge Philological Society*, *38*, 57–86.

Halstead, P. (1999a). *The Grain Production Strategies of Mycenaean Palaces* (pp. 321–326). pp. 321–326.

Halstead, P. (1999b). Towards a Model of Mycenaean Palatial Mobilization. In M. L. Galaty & W. A. Parkinson (Eds.), *Rethinking Mycenaean Palaces* (pp. 35–41). Los Angeles: Cotsen Institute of Archaeology.

Halstead, P. (2001). Mycenaean wheat, flax and sheep: palatial intervention in farming and its implications for rural society. In S. Voutsaki & J. T. Killen (Eds.), *Economy and politics in the Mycenaean palace states. Proceedings of a Conference held on 1-3 July 1999 in the Faculty of Classics, Cambridge* (pp. 38–50). Cambridge: Cambridge Philological Society.

Halstead, P. (2011). Redistribution in Aegean Palatial Societies : Terminology , Scale , and Significance. *American Journal of Archaeology*, *115*(2), 229–235.

Hammerstedt, S. W. (2005). *Mississippian construction, labor, and social organization in western Kentucky*. The Pennsylvania State University.

Hansen, M. H. (2006). *The shotgun method: the demography of the ancient Greek city-state culture*. Columbia: University of Missouri Press.

Hanson, J. W., & Ortman, S. G. (2017). A systematic method for estimating the populations of Greek and Roman settlements. *Journal of Roman Archaeology*, *30*(1), 301–324. https://doi.org/10.1017/S1047759400074134

Harper, C. R. (2016). *Laboring with the Economics of Mycenaean Architecture: Theories, Methods, and Explorations of Mycenaean Architectural Production.* Florida State University.

Haskell, H. W. (2004). Wanax to Wanax : Regional Trade Patterns in Mycenaean Crete. *Hesperia Supplements*, *33*, 151–160.

Heizer, R. F. (1966). Ancient Heavy Transport, Methods and Achievements. *Science*, *153*(3738), 821–830.

Hertzberg, H. T. E. (1972). Engineering Anthropology. In H. P. Van Cott & R. G. Kinkade (Eds.), *Human Engineering Guide to Equipment Design* (pp. 467–584). US Printing Office.

Higgins, M. D., & Higgins, R. (1996). *A Geological companion to Greece and the Aegean*. Ithaca: Cornell University Press.

Hitchcock, L. A., Chapin, A. P., Banou, E., & Reynolds, J. (2016). The Conglomerate Quarry at the Mycenaean Site of Vapheio-Palaiopyrgi. *Hesperia*, *85*(1), 65–90. https://doi.org/10.2972/hesperia.80.4.0511>

Hodder, I. (1994). Architecture and meaning: the example of Neolithic houses and tombs. *Architecture and Order: Approaches to Social Space.*, 73–86.

Hodges, P. (1989). *How the pyramids were built.* (J. Keable, Ed.). Shaftesbury: Element Books Ltd.

Homsher, R. S. (2012). Mud Bricks and the Process of Construction in the Middle Bronze Age Southern Levant. *Bulletin of the American Schools of Oriental Research*, *368*, 1–27.

Hope Simpson, R., & Hagel, D. K. (2006). *Mycenaean Fortifications, Highways, Dams and Canals*. Sävedalen: Paul Aströms Förlag.

Hurst, J. T. (1905). *A Hand-Book of Formulae, Tables, and Memoranda for Architectural Surveyors, and others engaged in building*. Retrieved from http://www.computerhistory.org/collections/catalog/B1610.01

Iakovidis, S. (1983). *Late Helladic Citadels on Mainland Greece*. Leiden: E.J. Brill.

Iakovidis, S. (1989). *Γλας Ι: Η Ανασκαφή 1955-1961*. Athens: Archaeological Society at Athens.

Iakovidis, S. (1998). *Γλας ΙΙ: Η Ανασκαφή 1981-1991*. Athens: Archaeological Society at Athens.

Iakovidis, S. (1999). Late Helladic Fortifications. In R. Laffineur (Ed.), *Polemos. Le contexte Guerrier en Égée á L'Age du Bronze. Actes de la 7e Rencontre égéenne internationale Université de Liége, 14-17 avril 1998.* (pp. 199–204). Liége: Université de Liége.

Iakovidis, S. (2001). Gla and the Kopais in the 13th Century BC. *Βιβλιοθηκη Τη; Εν Αθναι; Αρχαιολογικης Εταιρειας*, *221*.

Iakovidis, S., & French, E. (2003). *Archaeological atlas of Mycenae*. Athens: Archaeological Society at Athens.

Immerwahr, S.A. (1971). *The Neolithic and Bronze Ages (The Athenian Agora, vol. XIII).* Athens: American School for Classical Studies.

Ioannidis, C., Posiou, C., and Soile, S. (2007). A spatial information system for the archaeological site of Mycenae. *International Journal of Architectural Computing, 5(2)*, 376-394. DOI: 10.1260/1478-0771.5.2.376.

Isaakidou, V. (2006). Ploughin with cows: Knossos and the 'Secondary Products Revolution'. In D. Serjeantson and D. Field (Eds.), *Animals in the Neolithic of Britain and Europe.* Oxford: Oxbow books.

Jaklič, A., Erič, M., Mihajlović, I., Stopinšek, Ž., & Solina, F. (2015). Volumetric models from 3D point clouds: The case study of sarcophagi cargo from a 2nd/3rd century AD Roman shipwreck near Sutivan on island Brač, Croatia. *Journal of Archaeological Science*, *62*, 143–152. https://doi.org/10.1016/j.jas.2015.08.007

Jansen, A. G. (2002). *A study of the remains of Mycenaean roads and stations of Bronze-age Greece.* Lewiston: The Edwin Mellen Press.

Jazwa, K. A. (2016). *Building Mycenaean Identity: A systematic analysis of Early Helladic III to Protogeometric domestic architecture in mainland Greece for evidence of social groups*. Florida State University.

Jenks, G. F. (1967). The data model concept in statistical mapping. In *Internationales Jahrbuch für Kartographie* (pp. 186–190). Gütersloh: C. Bertelsmann Verlag.

Jones, R., Levi, S. T., & Vagnetti, L. (2014). *Italo-Mycenaean pottery: the archaeological and archaeometric dimensions*. Rome: Istituto di Studi sul Medterraneo Antico.

Kalogeroudis, G. (2008). *Befestigungsanlagen im griechischen Raum in der Bronzezeit und ihre Entwicklung von neolithischer bis in archaische Zeit*. Oxford: Archaeopress.

Kelany, A. (2015). Fire-setting in Ancient Quarries; Ancient Sources, New Evidence and Experiments. In A. Jiménez-serrano & C. Von Pilgrim (Eds.), *From the Delta to the Cataract. Studies Dedicated to Mohamed el-Bialy.* (pp. 88–97). Leiden: Brill.

Kelder, J. (2008). A Great King at Mycenae. An Argument for the Wanax as Great King and the Lawagetas as Vassal Ruler. *Palamedes*, *3*, 49–74.

Kelder, J. (2012). Ahhiyawa and the World of the Great Kings: A Re-Evaluation of Mycenaean Political Structures. *Talanta, XLIV:* 41-52.

Kelder, J. (2016). Een paspoort uit de Late Bronstijd? Een nieuwe interpretatie van het houten diptiek uit het Uluburun-wrak. *Tijdschrift Voor Mediterrane Archeologie*, *55*.

Kilian, K. (1981). Zeugnisse mykenischer Kultausübung in Tiryns. In R. Hägg & N. Marinatos (Eds.), *Sanctuaries and cults in the aegean bronze age* (pp. 49–58). Stockholm: Paul Aströms Förlag.

Kilian, K. (1988). The emergence of wanax ideology in the Mycenaean palaces. *Oxford Journal of Archaeology*, *7*(1), 291–302.

Killen, J. T. (1985). The Linear B tablets and the Mycenaean economy. In A. Morpurgo Davis & Y. Duhoux (Eds.), *Linear B: A 1984 Survey* (pp. 241–305). Louvain-La-Neuve: Peeters.

Killen, J.T. (1993). The oxen's names on the Knossian CH tablets. *Minos, 27-28,* 101-107.

Killen, J. T. (1998). The Role of the State in Wheat and Olive Production in Mycenaean Crete. *Aevum*, *72*(1), 19–23. Retrieved from http://www.jstor.org/stable/10.2307/20860821

Killen, J. T. (1999). Critique: a view from the tablets. In M. L. Galaty & W. A. Parkinson (Eds.), *Rethinking Mycenaean Palaces* (pp. 87–90). Los Angeles: The Cotsen Institute of Archaeology at UCLA.

Killen, J. T. (2006). Conscription and Corvée at Mycenaean Pylos. In M. Perna (Ed.), *Fiscality in Mycenaean and near Eastern archives: proceedings of the Conference held at Soprintendenza archivistica per la Campania, Naples, 21-23 October 2004* (pp. 73–87). Paris: De Boccard.

Killen, J. T. (2008). Mycenaean Economy. In Y. Duhoux & A. Morpurgo Davies (Eds.), *A Companion to Linear B: Mycenaean Greek Texts and their World* (p. 448). Leuven: Peeters.

Knapp, A. B. (2009). Monumental Architecture , Identity and Memory. *Proceedings of the Symposium: Bronze Age Architectural Traditions in the East Mediterranean: Diffusion and Diversity (Gasteig, Munich, 7-8 May, 2008)*, 47–59. Weilheim: Verein zur Förderung der Aufarbeitung der Hellenischen Geschichte.

Knapp, A. B., & Cherry, J. F. (1994). *Provenience Studies and Bronze Age Cyprus. Production, Exchange and Politico-Economic Change*. Madison: Prehistory Press.

Knappett, C. (2009). Scaling Up : From Household to State in Bronze Age Crete. In L. Preston (Ed.), *Inside the city in the Greek world: studies of urbanism from the Bronze Age to the Hellenistic period* (pp. 14–26). Oxford: Oxbow Books.

Kolonas, L. (2009). *Teichos Dymaion*. Athens: Kapon Editions.

Kolonas, L., & Gazis, M. (2006). Ο μυκηναικός οικισμός της Χαλανδρίτσας: Νεότερα στοιχεία. In *Α'*

Αρχαιολογικη Συνοδος Νοτιας και Δυτικης Ελλαδος (pp. 25–30). Athens.

Kolonas, L., Korres, G., Ziro, D., Petropoulos, M., & Monocrousos, D. (n.d.). *Teichos Dymaion Archaeological Site Signs*. Scientific Committee for the protection, restoration and presentation of the prehistoric sites of the Patra region. Fund for the Management of Resources for Archaeological Works, Ministery of Culture, Athens.

Kowarik, K., Reschreiter, H., & Wurzer, G. P. X. (2012). Modelling Prehistoric Mining. In *IFAC Proceedings Volumes* (Vol. 45). https://doi.org/10.3182/20120215-3-at-3016.00005

Küpper, M. (1996). *Mykenische Architektur. Material, Bearbeitungstechnik, Konstruktion und Erscheinungsbild.* Espelkamp: Verlag Marie Leidorf GmbH.

Laquement, C. H. (2009). *Landscape modification at Moundville: an energetic assessment of a Mississippian polity.* (University of Alabama). https://doi.org/10.2174/138920312803582960

Lawrence, A. W. (1957). *Greek architecture. (Revised by R.A. Tomlinson 1996)*. New Haven: Yale University Press.

Lawrence, A. W. (1979). *Greek aims in fortification*. Oxford: Clarendon Press.

Lehner, M. (1997). *The Complete Pyramids*. London: Thames & Hudson.

Lekson, S. (1984). *Great Pueblo Architecture of Chaco Canyon.* Albuquerque: University of New Mexico Press.

Littauer, M. A., & Crouwel, J. H. (1979). *Wheeled vehicles and ridden animals in the ancient Near East.* Leiden: Brill.

Loader, N. C. (1995). *The definition of cyclopean: an investigation into the origins of LH III fortifications on mainland Greece.* University of Durham.

Loader, N. C. (1998). *Building in Cyclopean Masonry. With Special Reference to the Mycenaean Fortifications on Mainland Greece*. Jonsered: Paul Aströms Förlag.

Loomis, W. T. (1998). *Wages, welfare costs and inflation in Classical Athens*. Ann Arbor: University of Michigan Press.

Lupack, S. (1999). Palaces, Sanctuaries, and Workshops: The Role of the Religious Sector in Mycenaean Economics. In Michael L. Galaty & W. A. Parkinson (Eds.), *Rethinking Mycenaean Palaces. New Interpretations of an Old Idea* (pp. 25–34). Los Angeles: The Cotsen Institute of Archaeology at UCLA.

Lupack, S. (2011). Redistribution in Aegean Palatial Societies. A View from Outside the Palace: The Sanctuary and the Damos in Mycenaean Economy and Society. *American Journal of Archaeology*, *115*(2), 207–217. https://doi.org/10.3764/aja.115.2.207

Manning, S. W. (2012). Chronology and Terminology. *The Oxford Handbook of the Bronze Age Aegean*, (May 2016), 1–28. https://doi.org/10.1093/oxfordhb/9780199873609.013.0002

Maran, J. (2006). Mycenaean Citadels as Performative Space. In Joseph Maran, C. Juwig, H. Schwengel, & U. Thaler (Eds.), *Constructing power. Architecture, Ideology and Social Practices* (pp. 75–88). Berlin: LIT verlag.

Maran, J. (2010). Tiryns. In E.H. Cline (Ed.), *The Oxford Handbook of the Aegean Bronze Age* (pp. 722-734). Oxford: Oxford University Press.

Maran, J. (2015). Tiryns and the Argolid in Mycenaean times. In A.-L. Schallin & I. Tournavitou (Eds.), *Mycenaeans up to date. The archaeology of the north-eastern Peloponnese - current concepts and new directions* (pp. 277–293). Stockholm: Svenska Institutet i Athen.

Marcus, J. (2003). Monumentality in Archaic States: Lessons learned from large-scale excavations of the past. In J. K. Papadopoulos & R. M. Leventhal (Eds.), *Theory and Practice in Mediterranean Archaeology* (pp. 115–134). Los Angeles: Cotsen Institute of Archaeology.

Margomenou, D. (2008). Food storage in prehistoric northern Greece: Interrogating complexity at the margins of the "Mycenaean world." *Journal of Mediterranean Archaeology*, *21*(2), 191–212. https://doi.org/10.1558/jmea.v21i2.191

Mastrokostas, E. (1962). Ανασχαφή τού Τείχους Δυμαίων. *Πραχτικά Τής Ἀρχαιολογιχής Ἑταιρείας*, *39*, 127–139.

Mastrokostas, E. (1966). Τειχος Δυμαιων. *Το Εργον*, 156–166.

Mayes, C. (1862). *The Victorian Contractors' and Builders' Price-Book, containing a universal and permanent price list for labor only, and the Melbourne prices of materials, for 1859.* Melbourne: Sands & McDougall.

McDonald, W. A., & Hope Simpson, R. (1972). Archaeological Exploration. In W. A. McDonald & G. R. Rapp Jr. (Eds.), *The Minnesota Messania Expedition. Reconstructing a Bronze Age Regional Environment* (pp. 117–147). Minneapolis: The University of Minnesota Press.

Mee, C. B., & Cavanagh, W. G. (1984). Mycenaean Tombs as Evidence for Social and Political Organisation. *Oxford Journal of Archaeology*, *3*(3), 45–64.

Melena, J. L. (1997). 13 Joins and Quasi-joins of Fragmetns in the Linear B Tablets from Pylos. *Minos Revista de Filología Egea*, *31–32*, 171–178. https://doi.org/10.1017/CBO9781107415324.004

Middleton, G. D. (2010). *The collapse of palatial society in Late Bronze Age Greece and the postpalatial period*. Oxford: BAR.

Monroe, C. M. (2011). ' From Luxuries to Anxieties ': a Liminal View of the Late Bronze Age World-System. In T. C. Wilkinson, S. Sherratt, & J. Bennet (Eds.), *Interweaving Worlds. Systemic Interactions in Eurasia, 7th to 1st Millenia BC* (pp. 87–99). Oxford: Oxbow Books.

Morgan, C., & Hall, J. (1996). Achaian Poleis and Achaian Colonisation. In M.H. Hansen (Ed.), *Introduction to an Inventory of Poleis. Symposium August, 23-03-1995* (pp. 164-232). Copenhagen: Munksgaard.

Morgan, C. (1999). *Isthmia: The Late Bronze Age Settlement and Early Iron Age Sanctuary.* Princeton: American School for Classical Studies at Athens.

Morris, H. J. (1986). *An Economic Model of the Late Mycenaean Kingdom of Pylos*. Ann Arbor: University Microfilm International.

Mountjoy, P. A. (1999). *Regional Mycenaean decorated pottery*. Rahden: Leidorf.

Mundell, C., Walker, P., Bailey, C., Heath, A., & McCombie, P. (2009). Limit-equilibrium assessment of drystone retaining structures. *Proceedings of the Institution of Civil Engineers - Geotechnical Engineering*, *162*(4), 203–212. https://doi.org/10.1680/geng.2009.162.4.203

Murakami, T. (2010). *Power Relations and Urban Landscape Formation: A Study of Construction Labor and Resources at Teotihuacan.* Arizone State University.

Murakami, T. (2015). Replicative construction experiments at Teotihuacan, Mexico: Assessing the duration and timing of monumental construction. *Journal of Field Archaeology*, *40*(3), 263–282. https://doi.org/10.1179/2042458214Y.0000000008

Mylonas, G. E. (1962). Ε. Το Διασωθεν δυτικον κυκλωπειον τειχος. *Αρχαιολογική Εφημερίς*, *101*, 101–109.

Mylonas, G. E. (1966). *Mycenae and the Mycenaean Age*. Princeton: Princeton University Press.

Mylonas, G. E. (1977). *Mycenae. A guide to its ruins and its history.* Athens.

Nakassis, D. (2010). Labor Mobilization in Mycenaean Pylos. In P. Carlier, C. De Lamberterie, M. Egetmeyer, N. Guilleus, F. Rougemont, & J. Zurbach (Eds.), *Études Mycéniennes. Actes du XIIIe Colloque International sur les Textes Égéens.* (pp. 269–283). Rome: Fabrizio Serra Editore.

Nakassis, D. (2013). Individuals and society in Mycenaean Pylos. In *Mnemosyne supplements. History and archaeology of classical antiquity* (Vol. 358).

Nakassis, D., Galaty, M. L., & Parkinson, W. A. (2012). State and Society. In Eric H. Cline (Ed.), *The Oxford Handbook of the Bronze Age Aegean*. https://doi.org/10.1093/oxfordhb/9780199873609.013.0018

Nakassis, D., Parkinson, W. A., & Galaty, M. L. (2011). Redistribution in Aegean Palatial Societies Redistributive Economies from a Theoretical and Cross-Cultural Perspective. *American Journal of Archaeology*, *115*(2), 177–184.

Naroll, R. (1962). Floor Area and Settlement Population. *American Antiquity*, *27*(4), 587–589.

Nelson, M. C. (2001). *The Architecture of Apano Englianos, Greece*. University of Toronto.

O'Neill, D. H., & Kemp, D. C. (1989). A comparison of work outputs of draught oxen. *Journal of Agricultural Engineering Research*, *43*(C), 33–44. https://doi.org/10.1016/S0021-8634(89)80004-6

Ohnaka, M. (1975). Frictional characteristics of typical rocks. *Journal of Physics of the Earth*, Vol. 23, pp. 87–112. https://doi.org/10.4294/jpe1952.23.87

Olson, B. R., Placchetti, R. A., Quartermaine, J., & Killebrew, A. E. (2013). The Tel Akko Total Archaeology Project (Akko, Israel): Assessing the suitability of multi-scale 3D field recording in archaeology. *Journal of Field Archaeology*, *38*(3), 244–262. https://doi.org/10.1179/0093469013Z.00000000056

Osborne, J. F. (2014). Monuments and Monumentality. In J. F. Osborne (Ed.), *Approaching Monumentality in Archaeology* (pp. 1–19). https://doi.org/10.1007/978-3-319-01784-6

Osborne, J. F. (2017). Counter-monumentality and the vulnerability of memory. *Journal of Social Archaeology*, *17*(2), 1–25. https://doi.org/10.1177/1469605317705445

Pakkanen, J. (2009). Documentation and computer reconstruction strategies in the study of architecture at the sanctuary of Poseidon at Kalaureia , Greece. In W. Bömer & S. Uhlirz (Eds.), *Workshop 13. Archäologie und Computer. Kulturelles Erbe und Neue Technologien 03-05.11.2008* (pp. 1–10). Vienna.

Pakkanen, J. (2013). The Econnomics of Shipshed Complexes: Zea, a Case Study. In D. Blackman, B. Rankov, K. Baika, H. Gerding, & J. Pakkanen (Eds.), *Shipsheds of the Ancient Mediteranean* (pp. 55–75). Cambridge: Cambridge University Press.

Pakkanen, J. (2018). Three-dimensional documentation of architecture and archaeology in the field. Combining intensive total station drawing and photogrammetry. In A. N. Brysbaert, M. V. Klinkenberg, A. G. Garcia-M., & I. Vikatou (Eds.), *Constructing monuments, perceiving monumentality and the economics of building: Theoretical and methodological approaches to the built environment2* (pp. 117–140). Leiden: Sidestone Press.

Palaima, T. G. (1997). Potter and fuller: the royal craftsmen. In R. Laffineur & P. P. Betancourt (Eds.), *TEXNH. Craftsmen, craftswomen and craftsmanship in the Aegean Bronze Age. Proceedings of the 6th International Aegean Conference. Philadelphia, Temple University, 18-21 April 1996. Volume II* (pp. 407–412). Liége: Université de Liége.

Palaima, T. G. (2012). Linear B. In E.H. Cline (Ed.), *The Oxford Handbook of the Bronze Age Aegean* (pp. 356–371). Oxford: Oxford University Press.

Palyvou, C. (2005). *Akrotiri, Thera: An architecture of affluence 3,500 years old*. Retrieved from http://web.a.ebscohost.com/ehost/detail/detail?vid=0&sid=d5269bde-8fd9-4eb0-80e2-c163cd5e590f%40sessionmgr4006&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3D%3D#AN=603383&db=nlebk

Pantou, P. A. (2010). Mycenaean dimini in context: Investigating regional variability and socioeconomic complexities in late bronze age Greece. *American Journal of Archaeology*, *114*(3), 381–401. https://doi.org/10.3764/aja.114.3.381

Papadopoulos, T. J. (1979). *Mycenaean Achaea*. Göteborg: Paul Aströms Förlag.

Papastamatiou, J., Vetoulis, D., Tataris, A., Christodoulou, G., Bornova, J., Lalechos, N., & Kounis, G. (1960). *Geological mapping of Greece*.

Parkinson, W. A., Nakassis, D., & Galaty, M. L. (2013). Crafts , Specialists , and Markets in Mycenaean Greece. Introduction. *American Journal of Archaeology*, *117*(3), 413–422.

Pegoretti, G. (1869). *Manuale pratico per l'estimazione dei lavori architettonici, stradali, idraulici e di fortificazione, per l'uso degli ingegneri ed architetti. Volume II* (A. Cantalup, Ed.). Milan: Tip. D. Salvi.

Pelet, J. J. G. (1832). *Carte de la Morée, rédigée et gravée au Dépôt général de la Guerre*. Paris.

Piggot, S. (1979). The First Wagons and Carts: twenty-five years later. *Institute of Archaeology Bulletin*, *16*, 3–18.

Polanyi, K., Arensberg, C. M., & Pearson, H. W. (1957). *Trade and Market in the Early Empires*. Glencoe: The Free Press.

Pulak, C. (1998). The Uluburun shipwreck: an overview. *International Journal of Nautical Archaeology*, *27*(3), 188–224. https://doi.org/10.1111/j.1095-9270.1998.tb00803.x

Pullen, D. J. (2011). Redistribution in Aegean Palatial Societies. Before the Palaces : Redistribution and Chiefdoms in Mainland Greece. *American Journal of Archaeology*, *115*(2), 185–195.

Pullen, D. J. (2013). Crafts, Specialists, and Markets in Mycenaean Greece; Exchanging the Mycenaean Economy. *American Journal of Archaeology*, *117*(3), 437–445. https://doi.org/10.3764/aja.117.3.0437

Pullen, D. J. (2016). "There's No Such Thing as a Free Lunch": Reciprocity in Mycenaean Political Economies. *Journal of Mediterranean Archaeology*, *29*(1), 78–88.

https://doi.org/http://dx.doi.org/10.1558/jmea.v29i1.31046

Raepsaet, G. (1993). Le Diolkos de l'Isthme à Corinthe: son Tracé, son Fonctionnement, avec une Annexe, Considérations Techniques et Mécaniques. *Bulletin de Correspondance Hellénique*, *117*(1), 233–261. https://doi.org/10.3406/bch.1993.1679

Rankine, W. J. M. (1866). *Useful rules and tables relating to mensuration, engineering, structures and machines*. London: C. Griffin.

Rehak, P. (1995). Enthroned Figures in Aegean Art and the Function of the Mycenaean Megaron. In Paul Rehak (Ed.), *The Role of the Ruler in the Prehistoric Aegean (Aegaeum 11).* (pp. 95–117). Austin: University of Texas at Austin.

Remondino, F., & Campana, S. (2014). 3D Recording and Modelling in Archaeology and Cultural Heritage: Theory and best practices. In F. Remondino & S. Campana (Eds.), *BAR International Series 2598*. https://doi.org/10.1177/0959683614545031

Remondino, F. (2011). Heritage recording and 3D modeling with photogrammetry and 3D scanning. *Remote Sensing*, *3*(6), 1104–1138. https://doi.org/10.3390/rs3061104

Renfrew, C. (1972). *The Emergence of Civilisation. The Cyclades and the Aegean in the Third Millennium B.C.* London: Methuen and Co Ltd.

Renfrew, C. (1975). Trade as Action at a Distance: Questions of Integration and Communication. In J. A. Sabloff & C. C. Lamberg-Karlovsky (Eds.), *Ancient Civilization and Trade* (pp. 3–60). Albuquerque: University of New Mexico Press.

Renfrew, C. (1982). Polity and power: interaction, intensification and exploitation. In Colin Renfrew & M. Wagstaff (Eds.), *An Island Polity: The Archaeology of Exploitation in Melos* (pp. 264–290). Cambridge: Cambridge University Press.

Roberts, C. A., Lee, F., & Bintliff, J. l. (1989). *Burial archaeology, current research, methods and developments* (C. A. Roberts, F. Lee, & J. L. Bintliff, Eds.). Oxford: BAR.

Roller, M. B. (2001). *Constructing Autocracy. Aristocrats and Emperors in Julio-Claudian Rome*. Princeton: Princeton University Press.

Roosevelt, C. H., Cobb, P., Moss, E., Olson, B. R., & Ünlüsoy, S. (2015). Excavation is Destruction Digitization: Advances in Archaeological Practice. *Journal of Field Archaeology*, *40*(3), 325–346. https://doi.org/10.1179/2042458215Y.0000000004

Rosenstock, E., Masson, A., & Zich, B. (2019). Moraines, megaliths and moo: Putting the prehistoric tractor to work. In J. Müller, M. Hinz, & M. Wunderlich (Eds.), *Megaliths Societies Landscapes. Early Monumentality and Social Differentiation in Neolithic Europe (Vol 3).* (pp. 1099–1112). Bad Langensalza: BELTZ Grafische Betriebe GmbH.

Russell, B. (2013). *The Economics of the Roman Stone Trade*. https://doi.org/10.1093/acprof

Russell, J. C. (1958). Late Ancient and Medieval populations. *Transactions of the American Philosophical Society*, *48*(3), 1–152.

Sahlins, M. (1972). *Stone Age Economics*. Chicago: Aldine-Altherton Inc.

Sapirstein, P. (2016). Accurate measurement with photogrammetry at large sites. *Journal of Archaeological Science*, *66*, 137–145. https://doi.org/10.1016/j.jas.2016.01.002

Sayer, W. (1934). Tests on Dunlop pneumatic equipment for farm carts, season 1933-34. *Agriculture and Livestock in India.*, *4*, 524–533.

Schliemann, H. (1878). *Mycenae; a narrative of researches and discoveries at Mycenae and Tiryns*. New York: Scribner, Armstrong & Company.

Schliemann, H., & Dorpfeld, W. (1886). *Tiryns. Der Prahistorische Palast der Konige von Tiryns.* Leipzig: F.A. Brockhaus.

Schon, R. (2011). Redistribution in Aegean Palatial Societies By Appointment to His Majesty the Wanax : Value-Added Goods and Redistribution in Mycenaean Palatial Economies. *American Journal of Archaeology*, *115*(2), 219–227.

Scoufopoulos, N. (1971). *Mycenaean Citadels* (Studies in). Göteborg: Aström.

Scranton, R. L. (1941). *Greek walls*. Cambridge: Harvard University Press.

Shaw, J. W. (2009). *Minoan Architecture: materials and techniques.* Padova: Aldo Ausilio Editore.

Shelmerdine, C.W. (2008). *The Cambrdige Companion to The Aegean Bronze Age*. Cambridge: Cambridge University Press.

Shelmerdine, C.W. (2013). Crafts , Specialists , and Markets in Mycenaean Greece. Economic Interplay Among Households and States. *American Journal of Archaeology*, *117*(3), 447–452.

Shelmerdine, C.W., & Bennet, J. (2008). Economy and Administration. In C.W. Shelmerdine (Ed.), *The Cambridge companion to the Aegean Bronze Age2* (pp. 289–309). Cambridge: Cambridge University Press.

Shelton, K. (2012). Mainland Greece. In Eric H. Cline (Ed.), *The Oxford Handbook of the Bronze Age Aegean* (pp. 1–12). https://doi.org/10.1093/oxfordhb/9780199873609.013.0004

Sherratt, A., & Sherratt, S. (1991). From Luxuries to Commodities : The Nature of Mediterranean Bronze Age Trading Systems. In N. H. Gale (Ed.), *Bronze Age Trade in the Mediterranean. Papers Presented at the Conference held at Rewley House, Oxford, in December 1989.* (pp. 351–386). Jonsered: Paul Astrőms Förlag.

Sherratt, S. (2001). Potemkin Palaces and Route-based Economies. In Sofia Voutsaki & J. Killen (Eds.), *Economy and Politics in the Mycenaean Palace States. Proceedings of a Conference held on 1-3 July 1999 in the Faculty of Classics, Cambridge* (pp. 214–238). Cambridge: Cambridge Philological Society.

Sherratt, Susan. (2017). A globalizing Bronze and Iron Age Mediterranean. In T. Hodor (Ed.), *The Routledge Handbook of Archaeology and Globalization* (pp. 602–617). https://doi.org/10.4324/9781315449005

Shimotsuma, Y., Ogata, M., Nakatsuji, T., & Ozawa, Y. (2011). History of Tribology in Ancient Northeast Asia-The Japanese Sledge and the Chinese Chariot. *Tribology Online*, *6*(3), 174–179. https://doi.org/10.2474/trol.6.174

Smailes, R. L. (2000). *Building Chan Chan: The application of construction project management to the analysis of ancient architecture.* University of Florida.

Soles, J. S. (1983). A Bronze Age Quarry in Eastern Crete. *Journal of Field Archaeology*, *10*(1), 33–46.

Spyropoulou, S., Vassilopoulou, A., & Zouzoula, E. (2013). Mycenae: Fortifications and intra muros

related structures. *International ICOMOS/ICOFOT Meeting, 11-14 April 2013. Diyarbakir Fortress and Historical Town.*, (April), 11–14.

Stanier, R. S. (1953). The Cost of the Parthenon. *The Journal of Hellenic Studies1*, *73*, 68–76.

Steffen. (1884). *Karten von Mykenai*. Berlin: Reimer.

Stylianidis, E., Georgopoulos, A., & Remondino, F. (2008). Basics of Image-Based Modelling Recording. In E. Stylianidis & F. Remondino (Eds.), *3D Recording, Documentation and Management of Cultural Heritage* (pp. 253–304). Caithness: Whittles Publishing.

Suwardhi, D., Menna, F., Remondino, F., Hanke, K., & Akmalia, R. (2015). DIGITAL 3D Borobodur: Integration of 3d surveying and modeling techniques. *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences - ISPRS Archives*, *40*(5W7), 417–423. https://doi.org/10.5194/isprsarchives-XL-5-W7-417-2015

Tartaron, T. F. (2013). *Maritime Networks in the Mycenaean World*. Cambridge: Cambridge University Press.

Tartaron, T. F., Pullen, D. J., Dunn, R. K., Tzortzopoulou, L., Dill, A., & Boyce, J. I. (2011). The Saronic Harbors Archaeological Research Project (SHARP) Investigations at Mycenaean Kalamianos, 2007-2009. *Hesperia*, *80*(4), 559–634.

Thomas, E. (2007). *Monumentality and the Roman Empire. Architecture in the Antonine age*. Oxford: Oxford University Press.

Timonen, R. E. (n.d.). *The agricultural economy of the Mycenaean Argive Plain, Greece*. Leiden University.

Timonen, R. E., & Brysbaert, A. (n.d.). *Saving up for a rainy day? Climate events, human-induced processes, and their potential effects on people's coping strategies in the Late Bronze Age Mycenaean Argive Plain, Greece*.

Tournavitou, I. (1995). *The "Ivory Houses" at Mycenae* (Supplement). Athens: The British School at Athens.

Trigger, B. G. (1990). Monumental Architecture: A Thermodynamic Explanation of Symbolic Behaviour. *World Archaeology*, *22*(2), 119–132.

Tsountas, C., & Manatt, J.I. (1897). *The Mycenaean Age.* London: Macmillan Press.

Turner, D. R. (2018). Comparative labour rates in cross-cultural contexts. In A. N. Brysbaert, M. V. Klinkenberg, A. G. Garcia-M., & I. Vikatou (Eds.), *Constructing monuments, perceiving monumentality and the economics of building: Theoretical and methodological approaches to the built environment* (pp. 195–217). Leiden: Sidestone Press.

Turner, D.R. (2020). *Grave Reminders: Comparing Mycenaean tomb building with labour and memory.* Leiden: Sidestone Press.

van den Berg, K. A. M. (2015). Meer dan de som der delen? Italo-Egeïsche netwerkdynamiek in Achaia en de Argolis tijdens de overgang van de Bronstijd naar de IJzertijd (ca. 1250-1000 voor Christus). *Tijdschrift Voor Mediterrane Archeologie*, *54*, 25–33.

van den Berg, K. A. M. (2018). *Keeping in touch in a changing world: Network dynamics and the connections between the Aegean and Italy during the Bronze Age-Iron Age Transition (ca.1250-1000 BC)* (Vrije Universiteit Amsterdam). Retrieved from

https://research.vu.nl/en/publications/keeping-in-touch-in-a-changing-world-network-dynamics-and-the-con

van der Waals, J. D. (1964). *Prehistoric disc wheels in the Netherlands.* J.B. Wolters, Groningen.

Varti-Matarangas, M., Matarangas, D., & Panagidis, G. (2002). Study of the Lithofacies of the Building Stones of the Tiryns Acropolis Monuments (Greece). In L. Lazzarini (Ed.), *ASMOSIA VI Proceedings of the Sixth International Conference of The Association for the Study of MArble and other Stones in Antiquity* (pp. 21–26). Venice.

Ventris, M., & Chadwick, J. (1956). *Documents in Ancient Greek. Three Hundred Selected Tablets from Knossos, Pylos and Mycenae with Commentary and Vocabulary.* Cambridge: Cambridge University Press.

Verdelis, N. (1963). Ανασκαφη Τιρυνθος. Αποκαλυψις δυο νεων συπιγγων. *Αρχαιολογικόν Δελτίον*, *18*(1), 66–73.

von Saher, H. (1994). Austronesian Megalith Transport Today : No hypotheses , just facts-figures-photographs. *Rapa Nui Journal*, *8*(September), 67–70.

Voutsaki, S. (1995). Social and Political Processes in the Mycenaean Argolid : the Evidence From the Mortuary Practices. In *POLITEIA - Aegaeum 12*.

Voutsaki, S. (2001). Economic Control, Power and Prestige in the Mycenaean World: The Archaeological Evidence. In Sofia Voutsaki & J. Killen (Eds.), *Economy and Politics in the Mycenaean Palace States. Proceedings of a Conference held on 1-3 July 1999 in the Faculty of Classics, Cambridge* (pp. 195–213). Cambridge: Cambridge Philological Society.

Voutsaki, S. (2010a). Agency and personhood at the onset of the Mycenaean period. *Archaeological Dialogues*, *17*(01), 65–92. https://doi.org/10.1017/S1380203810000097

Voutsaki, S. (2010b). From the kinship economy to the palatial economy: The argolid in the second millennium BC. *Political Economies of Aegean Bronze Age*, (February), 86–111.

Voutsaki, S. (2016). From Reciprocity to Centricity: The Middle Bronze Age in the Greek Mainland. *Journal of Mediterranean Archaeology*, *29*(1), 70–78. https://doi.org/10.1558/jmea.v29i1.31045

Voutsaki, S., Van den Beld, Y., & De Raaf, Y. (2018). Labour mobilization and architectural energetics in the North Cemetery at Ayios Vasilios, Laconia, Greece. In A. N. Brysbaert, M. V. Klinkenberg, A. G. Garcia-M., & I. Vikatou (Eds.), *Constructing monuments, perceiving monumentality and the economics of building: Theoretical and methodological approaches to the built environment* (pp. 169–192). Leiden: Sidestone Press.

Wace, A. J. B. (1921). Excavations at Mycenae. *The Annual of the British School at Athens*, *XXV*, 1–145.

Wace, A. J. B. (1955). Mycenae , 1955. *Archaeological Reports*, *2*, 39–40.

Waelkens, M. (1992). Bronze Age Quarries and Quarrying Techniques in the Eastern Mediterranean and the Near East. In M. Waelkens, N. Herz, & L. Moens (Eds.), *Ancient Stones: Quarrying, Trade and Provenance. Interdisciplinary Studies on Stones and Stone Technology in Europe and the Near East from the Prehistoric to the Early Christian Period* (pp. 5–20). Leuven: Leuven University Press.

Waelkens, M., Herz, N., & Moens, L. (1992). *Ancient Stones: Quarrying, Trade and Provenance. Interdisciplinary Studies on Stones and Stone Technology in Europe and the Near East from the Prehistoric to the Early Christian Period.* (M. Waelkens, N. Herz, & L. Moens, Eds.). Leuven: Leuven University Press.

Wallace-Hadrill, A. (1994). *Houses and Society in Pompeii and Herculaneum*. Princeton: Princeton University Press.

Webster, G. . (1990). Labor Control and Emergent Stratification in Prehistoric Europe. *Current Anthropology*, *31*(4), 337–366.

Whitelaw, T. M. (2000). Beyond the palace: a century of investigation in Europe's oldest city. *Bulletin of the Institute of Classical Studies*, *44*(1), 223–226.

Whitelaw, T.M. (2001). From Sites to Communities: Defining the Human Dimensions of Minoan Urbanism. In K. Branigan (Ed.), *Urbanism in the Aegean Bronze Age*. Sheffield: Sheffield Studies in Aegean Archaeology.

Windes, T. C., & Mckenna, P. J. (2001). Going against the Grain : Wood Production in Chacoan Society. *American Antiquity*, *66*(1), 119–140.

Winter, F. E. (1971). *Greek Fortifications*. London: Routledge & Kegan Paul.

Wooley, J. C., & Jones, M. M. (1925). The draft of farm wagons as affected by height of wheel and width of tire. *Missouri Agriculturual Experiment Station Bullettin*, *237*, 3–14.

Wright, G. R. H. (2005). *Ancient Building Technology. Volume 2: Materials.* Leiden: Brill.

Wright, J. C. (1978). *Mycenaean Masonry Practices and Elements of Construction* (Vol. 37). Bryn Mawr College.

Wright, J. C. (2005). Offsets in Mycenaean Architecture. In A. Dakouri-Hild & S. Sherratt (Eds.), *Papers presented to O.T.P.K. Dickinson on the occasion of his retirement. Twenty–Seven papers centred on the Mycenaean civilisati on with three appreciati ons and bibliography of Dickinson's works*: *Vol. BAR Intern* (pp. 191–199). Oxford: Archaeopress.

Wright, J. C. (2006). The Social Production of Space and the Architectural Reproduction of Society in the Bronze Age Aegean during the 2nd Millenium B.C.E. In Joseph Maran, C. Juwig, H. Schwengel, & U. Thaler (Eds.), *Constructing power. Architecture, Ideology and Social Practices* (pp. 49–69). https://doi.org/10.1515/arege-2014-0007

Wright, J. C. (2008). Early Mycenaean Greece. In Cynthia W Shelmerdine (Ed.), *The Cambridge companion to the Aegean Bronze Age* (pp. 230–257). Cambridge University Press.

Wurch-Kozelj, M. (1988). Methods of transporting blocks in antiquity. In N. Herz & M. Waelkens (Eds.), *Classical Marble: Geochemistry, Technology, Trade* (pp. 55–64). Dordrecht: Kluwer Academic Publishers.

Zhu, T. (2016). Geophysical properties of materials. Retrieved March 6, 2018, from http://www.jsg.utexas.edu/tyzhu/files/Some-Useful-Numbers.pdf

Ancient Sources

Apollodorus, *Library.*

Bacchylides, *Epinicians*

Columella, *RR*

De Marchi, *Cave*

Diocletianus, *Price Edict*

Homer, *Iliad; Odyssee*

Pausanias, *Description of Greece.*

Polybius, *Histories*

Theodosius, *Codex Theodosianus*

Xenophon, *Cyrpaedia*

Websites

www.perseus.tufts.edu (02/11/2020)

http://www.supercivilcd.com/FRICTION.htm (02/12/2019)

https://physics.info/friction/ (18/09/2018)

https://www.engineeringtoolbox.com/friction-coefficients-d_778.html (18/09/2018)

http://www.houtdatabase.nl/?q=hout/gww/24/mechanisch (03/06/2019)

https://www.wood-database.com/holm-oak/ (03/06/2019)

https://www.engineeringtoolbox.com/dirt-mud-densities-d_1727.html (03/06/2018)

Curriculum Vitae

Yannick Boswinkel (Schiedam 1987) started his archaeological education in 2009 at the Faculty of Archaeology, Leiden University. After successful completion of the Bachelor focused on Classical Archaeology and Digital Archaeology and a thesis dealing with a Late Roman structure on the site of Koroneia, Greece, he participated in the 'Recycling a Valley' project in Jordan of the National Museum of Antiquities, Leiden. He subsequently did the two-year research master 'Town and Country in the Mediterranean and the Near East', also at Leiden, from which he graduated *cum laude* in 2015. For the thesis produced during this time he focused once more on Koroneia, but this time included all the architectural remains documented at the site.

During his time as a student he had several student-assistant positions at various projects in- and outside the Faculty of Archaeology. These comprised various digitization projects, database design and student supervision during fieldwork in Greece. Moreover, he was a member of the Education Committee for two years (2010-2012) and of the Faculty Council for one year (2014-2015) during this time as well. In addition to this, he was co-organizer of the student initiated symposium 'A Theoretical Approach to Ancient Housing', as well as co-author and co-editor of the proceedings of that same symposium.

In 2016 he started his PhD project in the SETinSTONE project, led by Prof. dr. Ann Brysbaert at the Faculty of Archaeology, Leiden University. The study into the investment required for large scale fortifications in Mycenaean Greece, was finished in four years and resulted in the book before you. Within the same period, Yannick was also head of the Faculty Council at the same institute for two years (2017-2019) and an editor for the journal INTER-SECTION for three years (2016-2019).

Between 2012 to 2016 Yannick was involved in the 'Ancient Cities of Boeotia' project, led by Prof. dr. John Bintliff. Within this project he was involved in the survey and subsequent study of the architectural remains at three archaeological sites: Koroneia, Hyettos and Haliartos, all in Boeotia, Greece.

Appendices

Appendix 1: Overview of the calculated volumes of material for domestic structures.

Appendix 2: Overview of the calculations of the volume of the blocks according to the scenarios used.

Appendix 3: Overview of the quarrying calculations.

Appendix 4: Overview of the transport calculations.

Appendix 5: Overview of the assembly calculations.

Appendix 6: Overview of the total costs.

Appendix 1 Overview of the calculated volumes of material for domestic structures

This table provides an overview of the volumes of the used materials according to the size of the house, its walls and the way it is build. For each size category of the domestic structure (75 – 370m^2), six scenarios are used in which different characteristics of the structure are assigned varying values (as described in chapter 4). The size categories are indicated through the colour in the column, with each size having a different colour. In the table all measurements are in metres, the surface area in square metres and the volume in cubic metres.

Scenario	Height per floor	Second storey	Height stone socle	Height Mudbrick wall	Ground size structure	% wall ground surface	Width of walls		Stone	Mudbrick	Clay plaster Walls (5cm thick)	Clay plaster floors (5cm thick)	Clay plaster floors (20cm thick)	Clay roof 20cm	Wood / floor	Twigs 5cm thick / floor
1	2.5	no	1	1.5	75	38	0.5		28.5	42.8	7.1	2.3	9.3	15.0	2.3	3.8
2	2.5	yes	1	4	75	38	0.75		28.5	114.0	9.5	4.7	18.6	15.0	2.3	3.8
3	2.5	yes	5	0	75	38	0.75		142.5	0.0	9.5	4.7	18.6	15.0	2.3	3.8
4	2.5	no	2.5	0	75	38	0.5		71.3	0.0	7.1	2.3	9.3	15.0	2.3	3.8
5	2.5	yes	2.5	2.5	75	38	0.75		71.3	71.3	9.5	4.7	18.6	15.0	2.3	3.8
6	2.5	no	1	1.5	75	50	0.5		37.5	56.3	9.4	1.9	7.5	15.0	2.3	3.8
7	2.5	no	1	1.5	110	38	0.5		41.8	62.7	10.5	3.4	13.6	22.0	3.6	5.5
8	2.5	yes	1	4	110	38	0.75		41.8	167.2	13.9	6.8	27.3	22.0	3.6	5.5
9	2.5	yes	5	0	110	38	0.75		209.0	0.0	13.9	6.8	27.3	22.0	3.6	5.5
10	2.5	no	2.5	0	110	38	0.5		104.5	0.0	10.5	3.4	13.6	22.0	3.6	5.5
11	2.5	yes	2.5	2.5	110	38	0.75		104.5	104.5	13.9	6.8	27.3	22.0	3.6	5.5
12	2.5	no	1	1.5	110	50	0.5		55.0	82.5	13.8	2.8	11.0	22.0	3.6	5.5
13	2.5	no	1	1.5	160	38	0.5		60.8	91.2	15.2	5.0	19.8	32.0	5.0	8.0
14	2.5	yes	1	4	160	38	0.75		60.8	243.2	20.3	9.9	39.7	32.0	5.0	8.0
15	2.5	yes	5	0	160	38	0.75		304.0	0.0	20.3	9.9	39.7	32.0	5.0	8.0
16	2.5	no	2.5	0	160	38	0.5		152.0	0.0	15.2	5.0	19.8	32.0	5.0	8.0
17	2.5	yes	2.5	2.5	160	38	0.75		152.0	152.0	20.3	9.9	39.7	32.0	5.0	8.0
18	2.5	no	1	1.5	160	50	0.5		80.0	120.0	20.0	4.0	16.0	32.0	5.0	8.0

19	2.5	no	1	1.5	200	38	0.5		76.0	114.0	19.0	6.2	24.8	40.0	6.4	10.0
20	2.5	yes	1	4	200	38	0.75		76.0	304.0	25.3	12.4	49.6	40.0	6.4	10.0
21	2.5	yes	5	0	200	38	0.75		380.0	0.0	25.3	12.4	49.6	40.0	6.4	10.0
22	2.5	no	2.5	0	200	38	0.5		190.0	0.0	19.0	6.2	24.8	40.0	6.4	10.0
23	2.5	yes	2.5	2.5	200	38	0.75		190.0	190.0	25.3	12.4	49.6	40.0	6.4	10.0
24	2.5	no	1	1.5	200	50	0.5		100.0	150.0	25.0	5.0	20.0	40.0	6.4	10.0
25	2.5	no	1	1.5	250	38	0.5		95.0	142.5	23.8	7.8	31.0	50.0	7.7	12.5
26	2.5	yes	1	4	250	38	0.75		95.0	380.0	31.7	15.5	62.0	50.0	7.7	12.5
27	2.5	yes	5	0	250	38	0.75		475.0	0.0	31.7	15.5	62.0	50.0	7.7	12.5
28	2.5	no	2.5	0	250	38	0.5		237.5	0.0	23.8	7.8	31.0	50.0	7.7	12.5
29	2.5	yes	2.5	2.5	250	38	0.75		237.5	237.5	31.7	15.5	62.0	50.0	7.7	12.5
30	2.5	no	1	1.5	250	50	0.5		125.0	187.5	31.3	6.3	25.0	50.0	7.7	12.5
31	2.5	no	1	1.5	300	38	0.5		114.0	171.0	28.5	9.3	37.2	60.0	9.1	15.0
32	2.5	yes	1	4	300	38	0.75		114.0	456.0	38.0	18.6	74.4	60.0	9.1	15.0
33	2.5	yes	5	0	300	38	0.75		570.0	0.0	38.0	18.6	74.4	60.0	9.1	15.0
34	2.5	no	2.5	0	300	38	0.5		285.0	0.0	28.5	9.3	37.2	60.0	9.1	15.0
35	2.5	yes	2.5	2.5	300	38	0.75		285.0	285.0	38.0	18.6	74.4	60.0	9.1	15.0
36	2.5	no	1	1.5	300	50	0.5		150.0	225.0	37.5	7.5	30.0	60.0	9.1	15.0
37	2.5	no	1	1.5	370	38	0.5		140.6	210.9	35.2	11.5	45.9	74.0	9.1	18.5
38	2.5	yes	1	4	370	38	0.75		140.6	562.4	46.9	22.9	91.8	74.0	9.1	18.5
39	2.5	yes	5	0	370	38	0.75		703.0	0.0	46.9	22.9	91.8	74.0	9.1	18.5
40	2.5	no	2.5	0	370	38	0.5		351.5	0.0	35.2	11.5	45.9	74.0	9.1	18.5
41	2.5	yes	2.5	2.5	370	38	0.75		351.5	351.5	46.9	22.9	91.8	74.0	9.1	18.5
42	2.5	no	1	1.5	370	50	0.5		185.0	277.5	46.3	9.3	37.0	74.0	9.1	18.5

Appendix 2 Overview of the calculations of the volume of the blocks according to the scenarios used

This appendix provides an overview of the *maximum* volume of the blocks in each size group for the various sections according to the scenarios (as described in chapter 4). These volumes and weights are used in the calculations of the transport costs as well as the assembly costs. In the table the surface area is in square metres, the volume in cubic metres and the weight in kilograms. Since no reconstructions of the volume are used for sections 1 and 2 at Mycenae, these are not present in the table below.

Mycenae

Section 3

Scenario I	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.03	0.0014	3.40	56	0.08	190.55
	Group 2	0.08	0.0075	18.85	55	0.41	1,036.81
	Group 3	0.54	0.4344	1,086.12	56	24.33	60,822.50
	Group 4	1.88	2.2553	5,638.27	55	124.04	310,104.63
	Total				**222**	**148.86**	**372,154.49**

Scenario II	Size group	Max. weight / group	% of total	Max. weight / group	Max. weight / stone	Max. vol. / stone	Max. depth / stone
	Group 1	190.55	0.0512	242.32	4.33	0.00	0.06
	Group 2	1,036.81	0.2786	1,318.45	23.97	0.01	0.13
	Group 3	60,822.50	16.3433	77,344.89	1,381.16	0.55	1.02
	Group 4	310,104.63	83.3269	394,344.34	7,169.90	2.87	1.53
	Total	**372,154.49**		**473,250.00**			

Scenario III	Size group	Max. surface area / block	Max. vol.	% total volume	Max. vol. / group	Max. weight / group	# of stones	Max. weight / stone
	Group 1	0.10	0.0048	1.35	2.55	6,368.51	56	113.72
	Group 2	0.33	0.0333	3.86	7.31	18,273.61	55	332.25
	Group 3	0.81	0.6519	22.04	41.72	104,307.23	56	1,862.63
	Group 4	1.88	2.2553	72.75	137.72	344,300.62	55	6,260.01
	Total				**189.30**	**473,249.96**	**222**	

Scenario IV	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.03	0.0090	22.46	56	0.50	1,257.59
	Group 2	0.08	0.0414	103.53	55	2.28	5,694.09
	Group 3	0.54	0.8004	2,000.96	56	44.82	112,054.00
	Group 4	1.88	2.5765	6,441.34	55	141.71	354,273.90
	Total				**222**	**189.31**	**473,279.57**

Scenario V	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.03	0.0045	11.23	56	0.25	628.79
	Group 2	0.08	0.0207	51.76	55	1.14	2,847.04
	Group 3	0.54	0.4002	1,000.48	56	22.41	56,027.00
	Group 4	1.88	2.5765	6,441.34	55	141.71	354,273.90
	Total				**222**	**165.51**	**413,776.74**

Scenario VI	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.10	0.0097	24.23	126	1.22	3,052.48
	Group 2	0.33	0.1666	416.60	20	3.33	8,332.05
	Group 3	0.81	0.6519	1,629.83	49	31.94	79,861.47
	Group 4	1.88	2.2553	5,638.27	27	60.89	152,233.18
	Total				**222**	**97.39**	**243,479.18**

Scenario VII	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.10	0.0603	150.83	126	7.60	19,004.35
	Group 2	0.33	0.3848	962.03	20	7.70	19,240.56
	Group 3	0.81	1.4713	3,678.21	49	72.09	180,232.44

	Group 4	1.88	2.5765	6,441.34	27	69.57	173,916.28
	Total				**222**	**156.96**	**392,393.63**

Scenario VIII	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.10	0.0302	75.41	126	3.80	9,502.18
	Group 2	0.33	0.1924	481.01	20	3.85	9,620.28
	Group 3	0.81	0.7356	1,839.11	49	36.05	90,116.22
	Group 4	1.88	2.5765	6,441.34	27	69.57	173,916.28
	Total				**222**	**113.26**	**283,154.95**

Section 4

Scenario I	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.01	0.0003	0.87	43	0.01	37.30
	Group 2	0.02	0.0010	2.60	42	0.04	108.99
	Group 3	0.16	0.0657	164.27	42	2.76	6,899.38
	Group 4	0.97	0.4849	1,212.25	42	20.37	50,914.50
	Total				**169**	**23.18**	**57,960.17**

Scenario II	Size group	Max. weight / group	% of total	Max. weight / group	Max. weight / stone	Max. vol. / stone	Max. depth / stone
	Group 1	37.30	0.0644	40.06	0.93	0.00	0.04
	Group 2	108.99	0.1880	117.06	2.79	0.00	0.05
	Group 3	6,899.38	11.9037	7,410.03	176.43	0.07	0.43
	Group 4	50,914.50	87.8439	54,682.85	1,301.97	0.52	0.54
	Total	**57,960.17**		**62,250.00**			

Scenario III	Size group	Max. surface area / block	Max. vol.	% total volume	Max. vol. / group	Max. weight / group	# of stones	Max. weight / stone

	Group 1	0.10	0.0048	0.93	0.23	581.78	43	13.53
	Group 2	0.33	0.0333	2.54	0.63	1,581.09	42	37.65
	Group 3	0.81	0.6519	11.54	2.87	7,180.58	42	170.97
	Group 4	1.88	2.2553	84.99	21.16	52,906.55	42	1,259.68
	Total				**24.90**	**62,250.00**	**169**	

Scenario IV	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.01	0.0016	4.04	43	0.07	173.72
	Group 2	0.02	0.0060	14.96	42	0.25	628.15
	Group 3	0.16	0.1332	332.90	42	5.59	13,981.72
	Group 4	0.97	0.9550	2,387.61	42	40.11	100,279.59
	Total				**169**	**46.03**	**115,063.18**

Scenario V	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.01	0.0008	2.02	43	0.03	86.86
	Group 2	0.02	0.0030	7.48	42	0.13	314.07
	Group 3	0.16	0.0666	166.45	42	2.80	6,990.86
	Group 4	0.97	0.9550	2,387.61	42	40.11	100,279.59
	Total				**169**	**43.07**	**107,671.39**

Scenario VI	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.12	0.0119	29.69	125	1.48	3,711.75
	Group 2	0.37	0.1839	459.73	22	4.05	10,114.09
	Group 3	0.60	0.4791	1,197.82	15	7.19	17,967.30
	Group 4	0.97	0.9698	2,424.43	7	6.79	16,971.01
	Total				**169**	**19.51**	**48,764.15**

Scenario VII	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.12	0.0819	204.67	125	10.23	25,584.27
	Group 2	0.37	0.4461	1,115.22	22	9.81	24,534.87
	Group 3	0.60	0.9270	2,317.46	15	13.90	34,761.91
	Group 4	0.97	0.9550	2,387.51	7	6.69	16,712.54
	Total				**169**	**40.64**	**101,593.59**

Scenario VIII	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.12	0.0409	102.34	125	5.12	12,792.14
	Group 2	0.37	0.2230	557.61	22	4.91	12,267.43
	Group 3	0.60	0.4635	1,158.73	15	6.95	17,380.95
	Group 4	0.97	0.9550	2,387.51	7	6.69	16,712.54
	Total				**169**	**23.66**	**59,153.07**

Teichos Dymaion
Section 1

Scenario I	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.02	0.0008	2.01	86	0.07	172.86
	Group 2	0.07	0.0068	17.05	86	0.59	1,466.68
	Group 3	0.30	0.1810	452.44	85	15.38	38,457.47
	Group 4	1.84	2.2059	5,514.68	85	187.50	468,748.14
	Total				**342**	**203.54**	**508,845.15**

Scenario II	Size group	Max. weight / group	% of total	Max. weight / group	Max. weight / stone	Max. vol. / stone	Max. depth / stone
	Group 1	172.86	0.0340	120.26	1.40	0.00	0.03
	Group 2	1,466.68	0.2882	1,020.36	11.86	0.00	0.07
	Group 3	38,457.47	7.5578	26,754.59	314.76	0.13	0.42
	Group 4	468,748.14	92.1200	326,104.79	3,836.53	1.53	0.83
	Total	**508,845.15**		**354,000.00**			

Scenario III	Size group	Max. surface area / block	Max. vol.	% total volume	Max. vol. / group	Max. weight / group	# of stones	Max. weight / stone
	Group 1	0.10	0.0048	1.20	1.70	4,252.85	86	49.45
	Group 2	0.33	0.0333	4.06	5.75	14,374.17	86	167.14
	Group 3	0.81	0.6519	24.00	33.98	84,958.13	85	999.51
	Group 4	1.88	2.2553	70.74	100.17	250,414.85	85	2,946.06
	Total				**141.60**	**354,000.00**	**342**	

Scenario IV	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.02	0.0041	10.20	86	0.35	876.81
	Group 2	0.07	0.0356	89.09	86	3.06	7,661.47

	Group 3	0.30	0.3313	828.28	85	28.16	70,403.59
	Group 4	1.84	2.4923	6,230.73	85	211.84	529,612.22
	Total				**342**	**243.42**	**608,554.10**

Scenario V	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.02	0.0020	5.10	86	0.18	438.41
	Group 2	0.07	0.0178	44.54	86	1.53	3,830.74
	Group 3	0.30	0.1657	414.14	85	14.08	35,201.79
	Group 4	1.84	2.4923	6,230.73	85	211.84	529,612.22
	Total				**342**	**227.63**	**569,083.16**

Scenario VI	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.14	0.0142	35.46	205	2.91	7,270.07
	Group 2	0.37	0.1871	467.67	68	12.72	31,801.22
	Group 3	0.72	0.5736	1,433.90	59	33.84	84,599.86
	Group 4	1.84	2.2059	5,514.68	10	22.06	55,146.84
	Total				**342**	**71.53**	**178,817.99**

Scenario VII	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.14	0.1069	267.14	205	21.91	54,763.45
	Group 2	0.37	0.4577	1,144.21	68	31.12	77,806.56
	Group 3	0.72	1.2141	3,035.30	59	71.63	179,082.65
	Group 4	1.84	2.4923	6,230.73	10	24.92	62,307.32
	Total				**342**	**149.58**	**373,959.98**

Scenario VIII	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.14	0.0534	133.57	205	10.95	27,381.73

	Group 2	0.37	0.2288	572.11	68	15.56	38,903.28
	Group 3	0.72	0.6071	1,517.65	59	35.82	89,541.32
	Group 4	1.84	2.4923	6,230.73	10	24.92	62,307.32
	Total				**342**	**87.25**	**218,133.65**

Section 2

Scenario I	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.01	0.0004	0.89	153	0.05	136.76
	Group 2	0.02	0.0019	4.70	152	0.29	714.02
	Group 3	0.05	0.0253	63.33	152	3.85	9,626.45
	Group 4	1.26	1.2584	3,146.01	152	191.28	478,193.14
	Total				**609**	**195.47**	**488,670.37**

Scenario II	Size group	Max. weight / group	% of total	Max. weight / group	Max. weight / stone	Max. vol. / stone	Max. depth / stone
	Group 1	136.76	0.0280	55.89	0.37	0.00	0.02
	Group 2	714.02	0.1461	291.79	1.92	0.00	0.04
	Group 3	9,626.45	1.9699	3,933.94	25.88	0.01	0.20
	Group 4	478,193.14	97.8560	195,418.38	1,285.65	0.51	0.41
	Total	**488,670.37**		**199,700.00**			

Scenario III	Size group	Max. surface area / block	Max. vol.	% total volume	Max. vol. / group	Max. weight / group	# of stones	Max. weight / stone
	Group 1	0.10	0.0048	1.19	0.95	2,376.35	153	15.53
	Group 2	0.33	0.0333	3.38	2.70	6,740.03	152	44.34
	Group 3	0.81	0.6519	9.17	7.33	18,315.35	152	120.50
	Group 4	1.88	2.2553	86.26	68.91	172,268.26	152	1,133.34
	Total				**79.88**	**199,700.00**	**609**	

Scenario IV	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.01	0.0012	3.02	153	0.19	462.61
	Group 2	0.02	0.0052	12.88	152	0.78	1,957.51
	Group 3	0.05	0.0228	57.02	152	3.47	8,667.27
	Group 4	1.26	1.4117	3,529.15	152	214.57	536,430.19
	Total				**609**	**219.01**	**547,517.57**

Scenario V	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.01	0.0006	1.51	153	0.09	231.30
	Group 2	0.02	0.0026	6.44	152	0.39	978.75
	Group 3	0.05	0.0114	28.51	152	1.73	4,333.63
	Group 4	1.26	1.4117	3,529.15	152	214.57	536,430.19
	Total				**609**	**216.79**	**541,973.88**

Scenario VI	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.07	0.0072	18.00	485	3.49	8,731.09
	Group 2	0.23	0.1161	290.18	55	6.38	15,959.76
	Group 3	0.54	0.4283	1,070.79	44	18.85	47,114.94
	Group 4	1.26	1.5101	3,775.21	25	37.75	94,380.23
	Total				**609**	**66.47**	**166,186.01**

Scenario VII	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.07	0.0386	96.62	485	18.74	46,858.88
	Group 2	0.23	0.2237	559.24	55	12.30	30,758.37
	Group 3	0.54	0.7835	1,958.77	44	34.47	86,185.97
	Group 4	1.26	1.4117	3,529.15	25	35.29	88,228.65
	Total				**609**	**100.81**	**252,031.87**

Scenario VIII	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.07	0.0193	48.31	485	9.37	23,429.44
	Group 2	0.23	0.1118	279.62	55	6.15	15,379.18
	Group 3	0.54	0.3918	979.39	44	17.24	43,092.99
	Group 4	1.26	1.4117	3,529.15	25	35.29	88,228.65
	Total				**609**	**68.05**	**170,130.26**

Section 3

Scenario I	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.01	0.0004	1.12	100	0.04	112.01
	Group 2	0.03	0.0033	8.13	100	0.33	812.55
	Group 3	0.21	0.1046	261.44	100	10.46	26,143.88
	Group 4	2.19	2.1912	5,477.95	99	216.93	542,317.05
	Total				**399**	**227.75**	**569,385.49**

Scenario II	Size group	Max. weight / group	% of total	Max. weight / group	Max. weight / stone	Max. vol. / stone	Max. depth / stone
	Group 1	112.01	0.0197	48.22	0.48	0.00	0.02
	Group 2	812.55	0.1427	349.77	3.50	0.00	0.04
	Group 3	26,143.88	4.5916	11,254.00	112.54	0.05	0.22
	Group 4	542,317.05	95.2460	233,448.01	2,358.06	0.94	0.43
	Total	**569,385.49**	245,100.0000	**245,100.00**			

Scenario III	Size group	Max. surface area / block	Max. vol.	% total volume	Max. vol. / group	Max. weight / group	# of stones	Max. weight / stone
	Group 1	0.10	0.0048	0.76	0.75	1,869.91	100	18.70
	Group 2	0.33	0.0333	2.74	2.68	6,711.44	100	67.11
	Group 3	0.81	0.6519	13.31	13.05	32,622.00	100	326.22

	Group 4	1.88	2.2553	83.19	81.56	203,896.64	99	2,059.56
	Total				**98.04**	**245,100.00**	**399**	

Scenario IV	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.01	0.0017	4.24	100	0.17	424.14
	Group 2	0.03	0.0117	29.30	100	1.17	2,929.78
	Group 3	0.21	0.1913	478.26	100	19.13	47,825.54
	Group 4	2.19	3.2435	8,108.81	99	321.11	802,772.13
	Total				**399**	**341.58**	**853,951.59**

Scenario V	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.01	0.0008	2.12	100	0.08	212.07
	Group 2	0.03	0.0059	14.65	100	0.59	1,464.89
	Group 3	0.21	0.0957	239.13	100	9.57	23,912.77
	Group 4	2.19	3.2435	8,108.81	99	321.11	802,772.13
	Total				**399**	**331.34**	**828,361.86**

Scenario VI	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.16	0.0163	40.70	288	4.69	11,720.23
	Group 2	0.48	0.2381	595.37	64	15.24	38,103.92
	Group 3	0.90	0.7162	1,790.54	32	22.92	57,297.22
	Group 4	2.19	2.1912	5,477.95	15	32.87	82,169.25
	Total				**399**	**75.72**	**189,290.62**

Scenario VII	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.16	0.1314	328.38	288	37.83	94,573.19
	Group 2	0.48	0.6574	1,643.57	64	42.08	105,188.80

	Group 3	0.90	1.6942	4,235.46	32	54.21	135,534.64
	Group 4	2.19	3.2435	8,108.81	15	48.65	121,632.14
	Total				**399**	**182.77**	**456,928.77**

Scenario VIII	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.16	0.0657	164.19	288	18.91	47,286.60
	Group 2	0.48	0.3287	821.79	64	21.04	52,594.40
	Group 3	0.90	0.8471	2,117.73	32	27.11	67,767.32
	Group 4	2.19	3.2435	8,108.81	15	48.65	121,632.14
	Total				**399**	**115.71**	**289,280.46**

Section 4

Scenario I	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.01	0.0003	0.85	70	0.02	59.37
	Group 2	0.02	0.0018	4.46	69	0.12	308.07
	Group 3	0.06	0.0310	77.62	69	2.14	5,355.95
	Group 4	1.18	1.1800	2,949.98	69	81.42	203,548.28
	Total				**277**	**83.71**	**209,271.66**

Scenario II	Size group	Max. weight / group	% of total	Max. weight / group	Max. weight / stone	Max. vol. / stone	Max. depth / stone
	Group 1	59.37	0.0284	23.90	0.34	0.00	0.02
	Group 2	308.07	0.1472	124.02	1.80	0.00	0.04
	Group 3	5,355.95	2.5593	2,156.24	31.25	0.01	0.20
	Group 4	203,548.28	97.2651	81,945.84	1,187.62	0.48	0.40
	Total	**209,271.66**		**84,250.00**			

Scenario III	Size group	Max. surface area / block	Max. vol.	% total volume	Max. vol. / group	Max. weight / group	# of stones	Max. weight / stone

	Group 1	0.10	0.0048	0.99	0.33	836.75	70	11.95
	Group 2	0.33	0.0333	2.91	0.98	2,450.23	69	35.51
	Group 3	0.81	0.6519	8.96	3.02	7,552.53	69	109.46
	Group 4	1.88	2.2553	87.13	29.36	73,410.49	69	1,063.92
	Total				**33.70**	**84,250.00**	**277**	

Scenario IV	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.01	0.0011	2.79	70	0.08	195.61
	Group 2	0.02	0.0048	11.93	69	0.33	823.39
	Group 3	0.06	0.0309	77.37	69	2.14	5,338.70
	Group 4	1.18	1.2818	3,204.48	69	88.44	221,109.09
	Total				**277**	**90.99**	**227,466.79**

Scenario V	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.01	0.0006	1.40	70	0.04	97.81
	Group 2	0.02	0.0024	5.97	69	0.16	411.69
	Group 3	0.06	0.0155	38.69	69	1.07	2,669.35
	Group 4	1.18	1.2818	3,204.48	69	88.44	221,109.09
	Total				**277**	**89.72**	**224,287.94**

Scenario VI	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.10	0.0099	24.83	219	2.18	5,437.82
	Group 2	0.27	0.1346	336.39	22	2.96	7,400.58
	Group 3	0.52	0.4198	1,049.59	27	11.34	28,338.88
	Group 4	1.18	1.1800	2,949.98	9	10.62	26,549.78
	Total				**277**	**27.09**	**67,727.06**

Scenario VII	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.10	0.0626	156.51	219	13.71	34,274.86
	Group 2	0.27	0.2792	698.02	22	6.14	15,356.50
	Group 3	0.52	0.7603	1,900.87	27	20.53	51,323.59
	Group 4	1.18	1.2818	3,204.48	9	11.54	28,840.32
	Total				**277**	**51.92**	**129,795.28**

Scenario VIII	Size group	Max. surface area / block	Max. vol. / block	Max. weigh / block	#blocks	Max. vol. / group	Max. weight / group
	Group 1	0.10	0.0313	78.25	219	6.85	17,137.43
	Group 2	0.27	0.1396	349.01	22	3.07	7,678.25
	Group 3	0.52	0.3802	950.44	27	10.26	25,661.80
	Group 4	1.18	1.2818	3,204.48	9	11.54	28,840.32
	Total				**277**	**31.73**	**79,317.80**

Appendix 3 Overview of the quarrying calculations

This appendix provides an overview of the costs of material acquisition based on the various scenarios used for the volume calculations as well as the different rates, as presented in chapter 7. All volumes are in cubic metres and all labour costs are in person-hours (ph). Since no reconstructions of the volume are used for sections 1 and 2 at Mycenae, these are not present in the table below.

Mycenae
Section 3

Scenario	Vol. per face	Quarry rate 0,09m3/ph	Quarry rate 0,057m3/ph	Vol. fill	Vol. fill no voidage	Quarry rate 0,09m3/ph	Quarry rate 0,057m3/ph	Rubble quarry rate 0.5 m3 / ph	Rubble quarry rate 0.5 m3 / ph	Total minimum (ph)	Total maximum (ph)
I	148.8	3,306.7	5,221.1	695.9	899.4	7,732.2	12,208.8	1,391.8	1,798.8	4,698.5	17,429.8
II	189.3	4,206.7	6,642.1	614.9	818.4	6,832.2	10,787.7	1,229.8	1,636.8	5,436.5	17,429.8
III	189.3	4,206.7	6,642.1	614.9	818.4	6,832.2	10,787.7	1,229.8	1,636.8	5,436.5	17,429.8
IV	189.3	4,206.9	6,642.5	614.9	818.4	6,832.0	10,787.4	1,229.8	1,636.8	5,436.6	17,429.8
V	165.5	3,677.8	5,807.0	662.5	866.0	7,361.1	11,622.8	1,325.0	1,732.0	5,002.8	17,429.8
VI	97.4	2,164.4	3,417.5	798.7	1,002.2	8,874.4	14,012.3	1,597.4	2,004.4	3,761.8	17,429.8
VII	157.0	3,488.9	5,508.8	679.5	883.0	7,550.0	11,921.1	1,359.0	1,766.0	4,847.9	17,429.8
VIII	113.3	2,517.8	3,975.4	766.9	970.4	8,521.1	13,454.4	1,533.8	1,940.8	4,051.6	17,429.8
No size differentiation	189.3	4,206.7	6,642.1	614.9	818.4	6,832.2	10,787.7	1,229.8	1,636.8	5,436.5	17,429.8

Section 4

Scenario	Vol. per face	Quarry rate 0,09m3/ph	Quarry rate 0,057m3/ph	Vol. fill	Vol. fill no voidage	Quarry rate 0,09m3/ph	Quarry rate 0,057m3/ph	Rubble quarry rate 0.5 m3 / ph	Rubble quarry rate 0.5 m3 / ph	Total minimum (ph)	Total maximum (ph)
I	23.2	515.6	814.0	144.4	183.4	1,603.9	2,532.5	288.7	366.8	804.3	3,346.5

II	24.9	553.3	873.7	141.0	180.0	1,566.1	2,472.8	281.9	360.0	835.2	3,346.5
III	24.9	553.3	873.7	141.0	180.0	1,566.1	2,472.8	281.9	360.0	835.2	3,346.5
IV	46.0	1,022.2	1,614.0	98.8	137.8	1,097.2	1,732.5	197.5	275.6	1,219.7	3,346.5
V	43.1	957.8	1,512.3	104.6	143.6	1,161.7	1,834.2	209.1	287.2	1,166.9	3,346.5
VI	19.5	433.3	684.2	151.8	190.8	1,686.1	2,662.3	303.5	381.6	736.8	3,346.5
VII	40.6	902.2	1,424.6	109.6	148.6	1,217.2	1,921.9	219.1	297.2	1,121.3	3,346.5
VIII	23.7	526.7	831.6	143.4	182.4	1,592.8	2,514.9	286.7	364.8	813.4	3,346.5
No size differentiation	24.9	553.3	873.7	141.0	180.0	1,566.1	2,472.8	281.9	360.0	835.2	3,346.5

Teichos
Dymaion
Section 1

Scenario	Vol. per face	Quarry rate 0,09m3/ph	Quarry rate 0,057m3/ph	Vol. fill	Vol. fill no voidage	Quarry rate 0,09m3/ph	Quarry rate 0,057m3/ph	Rubble quarry rate 0.5 m3 / ph	Rubble quarry rate 0.5 m3 / ph	Total minimum (ph)	Total maximum (ph)
I	203.5	4,522.2	7,140.4	197.2	237.6	2,191.6	3,460.4	394.5	475.3	4,916.7	10,600.7
II	141.6	3,146.7	4,968.4	321.0	386.8	3,567.1	5,632.3	642.1	773.6	3,788.7	10,600.7
III	141.6	3,146.7	4,968.4	321.0	386.8	3,567.1	5,632.3	642.1	773.6	3,788.7	10,600.7
IV	234.4	5,208.9	8,224.6	135.4	163.2	1,504.9	2,376.1	270.9	326.4	5,479.8	10,600.7
V	227.6	5,057.8	7,986.0	149.0	179.6	1,656.0	2,614.7	298.1	359.1	5,355.9	10,600.7
VI	71.5	1,588.9	2,508.8	461.2	555.7	5,124.9	8,091.9	922.5	1,111.4	2,511.4	10,600.7
VII	149.6	3,324.4	5,249.1	305.0	367.5	3,389.3	5,351.6	610.1	735.0	3,934.5	10,600.7
VIII	87.3	1,940.0	3,063.2	429.6	517.6	4,773.8	7,537.5	859.3	1,035.3	2,799.3	10,600.7
No size differentiation	141.6	3,146.7	4,968.4	321.0	386.8	3,567.1	5,632.3	642.1	773.6	3,788.7	10,600.7

Section 2

Scenario	Vol. per face	Quarry rate 0,09m3/ph	Quarry rate 0,057m3/ph	Vol. fill	Vol. fill no voidage	Quarry rate 0,09m3/ph	Quarry rate 0,057m3/ph	Rubble quarry rate 0.5 m3 / ph	Rubble quarry rate 0.5 m3 / ph	Total minimum (ph)	Total maximum (ph)
I	195.5	4,344.4	6,859.6	72.4	87.2	803.9	1,269.3	144.7	174.3	4,489.1	8,128.9
II	79.9	1,775.6	2,803.5	303.6	365.7	3,372.8	5,325.4	607.1	731.4	2,382.7	8,128.9
III	79.9	1,775.6	2,803.5	303.6	365.7	3,372.8	5,325.4	607.1	731.4	2,382.7	8,128.9
IV	219.0	4,866.7	7,684.2	25.4	30.5	281.7	444.7	50.7	61.1	4,917.4	8,128.9
V	216.8	4,817.8	7,607.0	29.8	35.8	330.6	521.9	59.5	71.7	4,877.3	8,128.9
VI	66.5	1,477.8	2,333.3	330.4	398.0	3,670.6	5,795.6	660.7	796.0	2,138.5	8,128.9
VII	100.8	2,240.0	3,536.8	261.8	315.4	2,908.3	4,592.1	523.5	630.7	2,763.5	8,128.9
VIII	68.1	1,513.3	2,389.5	327.2	394.2	3,635.0	5,739.5	654.3	788.3	2,167.6	8,128.9
No size differentiation	79.9	1,775.6	2,803.5	303.6	365.7	3,372.8	5,325.4	607.1	731.4	2,382.7	8,128.9

Section 3

Scenario	Vol. per face	Quarry rate 0,09m3/ph	Quarry rate 0,057m3/ph	Vol. fill	Vol. fill no voidage	Quarry rate 0,09m3/ph	Quarry rate 0,057m3/ph	Rubble quarry rate 0.5 m3 / ph	Rubble quarry rate 0.5 m3 / ph	Total minimum (ph)	Total maximum (ph)
I	227.8	5,062.2	7,993.0	0.1	0.1	0.8	1.2	0.1	0.2	5,062.4	7,994.2
II	98.0	2,177.8	3,438.6	259.7	312.9	2,885.2	4,555.6	519.3	625.7	2,697.1	7,994.2
III	98.0	2,177.8	3,438.6	259.7	312.9	2,885.2	4,555.6	519.3	625.7	2,697.1	7,994.2
IV	341.6	7,591.1	11,986.0	-227.5	-274.1	-2,528.1	-3,991.8	-455.1	-548.3	7,136.1	7,994.2
V	331.3	7,362.2	11,624.6	-206.9	-249.3	-2,299.2	-3,630.4	-413.9	-498.6	6,948.4	7,994.2
VI	75.7	1,682.2	2,656.1	304.3	366.6	3,380.8	5,338.1	608.5	733.2	2,290.8	7,994.2
VII	182.8	4,062.2	6,414.0	90.1	108.5	1,000.8	1,580.2	180.1	217.0	4,242.4	7,994.2
VIII	115.7	2,571.1	4,059.6	224.3	270.2	2,491.9	3,934.6	448.5	540.4	3,019.7	7,994.2
No size differentiation	98.0	2,177.8	3,438.6	259.7	312.9	2,885.2	4,555.6	166.5	200.5	2,344.2	7,994.2

Section 4

Scenario	Vol. per face	Quarry rate 0,09m3/ph	Quarry rate 0,057m3/ph	Vol. fill	Vol. fill no voidage	Quarry rate 0,09m3/ph	Quarry rate 0,057m3/ph	Rubble quarry rate 0.5 m3 / ph	Rubble quarry rate 0.5 m3 / ph	Total minimum (ph)	Total maximum (ph)
I	83.7	1,860.0	2,936.8	14.5	17.5	161.6	255.1	29.1	35.0	1,889.1	3,191.9
II	33.7	748.9	1,182.5	114.5	138.0	1,272.7	2,009.5	229.1	276.0	978.0	3,191.9
III	33.7	748.9	1,182.5	114.5	138.0	1,272.7	2,009.5	229.1	276.0	978.0	3,191.9
IV	91.0	2,022.2	3,193.0	-0.1	-0.1	-0.7	-1.1	-0.1	-0.1	2,022.1	3,191.9
V	89.7	1,993.3	3,147.4	2.5	3.1	28.2	44.6	5.1	6.1	1,998.4	3,191.9
VI	27.7	615.6	971.9	126.5	152.5	1,406.0	2,220.0	253.1	304.9	868.6	3,191.9
VII	51.9	1,153.3	1,821.1	78.1	94.1	868.2	1,370.9	156.3	188.3	1,309.6	3,191.9
VIII	31.7	704.4	1,112.3	118.5	142.8	1,317.1	2,079.6	237.1	285.6	941.5	3,191.9
No size differentiation	33.7	748.9	1,182.5	114.5	138.0	1,272.7	2,009.5	229.1	276.0	978.0	3,191.9

Appendix 4 Overview of the transport calculations

This appendix consists of the calculation overviews of the transport costs, based on the parameters as described in chapter 4. There are three separate tables: table 1 consists of the calculations of the number of oxen- and person-hours per section, scenario and size group as subsequently used in the second table. Table 2 provides an overview of the oxen-hours and person-hours for each section and scenario. Table 3 is an overview of the loading and unloading per section and scenario. In the tables all weights are in kilograms, distances are in kilometres, volume in cubic metres and labour is in oxen- and person-hours. The following abbreviations have been used in the tables:

LG Lion Gate
NG North Gate
int interior
ext exterior
Swall southern wall
Nwall northern wall

Table 1. Overview of the transport cost per size category

In this table a number of constant values are left out:

1. The speed (loaded 1.67km/h, unloaded 2.5km/h)
2. The actual calculated force that is required, this is dependent on the weight, slope and friction coefficient, see chapter 3.
3. The slope, which as explained can be up to 10 degrees with the same animals if on flat terrain they can use 14% of their body weight as traction and up to 50% for short stretches.
4. The weight per ox is taken as an average of 375kg, see chapter 3.
5. The force taken as percentage of the oxen's body weight, see chapter 3 and point 3 above.
6. The multiple yoking efficiency loss, as described in chapter 3 is set at 36%.

Mycenae

Section 1	Total Weight (kg)	Weight per trip (kg)	Weight of wagon/sledge (kg)	Distance (km)	Number of oxen (even)	hour/ trip	trips/ hour	# trips	# hours	oh	oh roundup even	ph round up even
Conglomerate LG total	6000	6,000	0	0.005	52	0.005	200.24	1.00	0.005	0.26	0.05	
	682500	3,500	1,000	1.8	10	1.80	0.56	195.00	350.58	3,155.22	3,505.80	

Conglomerate LG FE	2,258.82	5,000	1,000	1.8	12	1.80	0.56	0.45	0.81	9.75	9.75	4.87
	29,520.00	5,000	1,000	1.8	12	1.80	0.56	5.90	10.61	127.37	127.37	63.69
	72,000.00	5,000	1,000	1.8	12	1.80	0.56	14.40	25.89	310.67	310.67	155.33
	41,788.24	6,000	2,000	1.8	16	1.80	0.56	6.96	12.52	200.34	200.34	100.17
Total												**648.13**
Conglomerate LG FW	26,929.41	5,000	1,000	1.8	12	1.80	0.56	5.39	9.68	116.20	116.20	58.10
	34,552.94	5,000	1,000	1.8	12	1.80	0.56	6.91	12.42	149.09	149.09	74.54
	56,809.41	5,000	1,000	1.8	12	1.80	0.56	11.36	20.43	245.12	245.12	122.56
	36,956.47	6,300	2,000	1.8	18	1.80	0.56	5.87	10.55	179.29	189.83	94.92
Total												**700.24**
Conglomerate LG gate	49.41	5,000	1,000	1.8	12	1.80	0.56	0.01	0.02	0.21	0.21	0.11
	23,761.18	5,000	1,000	1.8	12	1.80	0.56	4.75	8.54	102.53	102.53	51.26
	26,728.24	5,000	1,000	1.8	12	1.80	0.56	5.35	9.61	115.33	115.33	57.66
	42,260.00	5,000	1,000	1.8	12	1.80	0.56	8.45	15.20	182.34	182.34	91.17
Total												**400.41**
Posts	11,677.98	5,838.99	2,000	1.8	90	1.80	0.56	2.00	3.60	320.02	323.61	161.81
Threshold	25,570.59	25,570.59	2,000	1.8	312	1.80	0.56	1.00	1.80	560.93	560.93	280.46
Lintel	25,570.59	25,570.59	2,000	1.8	312	1.80	0.56	1.00	1.80	560.93	560.93	280.46
Lion relief	14,720.59	14,720.59	2,000	1.8	190	1.80	0.56	1.00	1.80	341.59	341.59	170.80
Total												**1,787.06**
Conglomerate LG gate int	9,620.00	5,000	1,000	1.8	12	1.80	0.56	1.92	3.46	41.51	41.51	20.75
	8,680.00	5,000	1,000	1.8	12	1.80	0.56	1.74	3.12	37.45	37.45	18.73
	12,581.18	5,000	1,000	1.8	12	1.80	0.56	2.52	4.52	54.29	54.29	27.14
	14,828.24	5,000	1,000	1.8	12	1.80	0.56	2.97	5.33	63.98	63.98	31.99
Total												**197.23**
Conglomerate LG	4,469.41	5,000	1,000	1.8	12	1.80	0.56	0.89	1.61	19.28	19.28	9.64

int Ewall												
	5,168.24	5,000	1,000	1.8	12	1.80	0.56	1.03	1.86	22.30	22.30	11.15
	6,081.18	5,000	1,000	1.8	12	1.80	0.56	1.22	2.19	26.24	26.24	13.12
	7,578.82	5,000	1,000	1.8	12	1.80	0.56	1.52	2.73	32.70	32.70	16.35
Total												**100.53**
Conglomerate LG												
Int Bastion	3,735.29	5,000	1,000	1.8	12	1.80	0.56	0.75	1.34	16.12	16.12	8.06
	13,337.65	5,000	1,000	1.8	12	1.80	0.56	2.67	4.80	57.55	57.55	28.77
	14,882.35	5,000	1,000	1.8	12	1.80	0.56	2.98	5.35	64.21	64.21	32.11
	28,797.65	5,000	1,000	1.8	12	1.80	0.56	5.76	10.35	124.26	124.26	62.13
Total												**262.14**

Section 2	Total Weight (kg)	Weight per trip (kg)	Weight of wagon/sledge (kg)	Distance (km)	Number of oxen (even)	hour/ trip	trips/ hour	# trips	# hours	oh	oh roundup even	ph round up even
Conglomerate LG												
int+ext	141,750.00	5,000	1,000	2.20	12	2.20	0.46	28.35	62.30	747.54	747.54	
	141,750.00	5,000	1,000	2.20	10	2.20	0.46	28.35	62.30	747.54	622.95	
NG_int_Structure	181.18	5,000	1,000	2.20	12	2.20	0.46	0.04	0.08	0.96	0.96	0.48
	4,010.59	5,000	1,000	2.20	12	2.20	0.46	0.80	1.76	21.15	21.15	10.58
	9,054.12	5,000	1,000	2.20	12	2.20	0.46	1.81	3.98	47.75	47.75	23.87
	13,096.47	5,000	1,000	2.20	12	2.20	0.46	2.62	5.76	69.07	69.07	34.53
	22,918.82	6,500	2,000	2.20	18	2.20	0.46	3.53	7.75	131.71	139.46	69.73
Total											**277.43**	**138.71**
NG_ext_Swall	27.06	5,000	1,000	2.20	12	2.20	0.46	0.01	0.01	0.14	0.14	0.07
	4,803.53	5,000	1,000	2.20	12	2.20	0.46	0.96	2.11	25.33	25.33	12.67
	8,834.12	5,000	1,000	2.20	12	2.20	0.46	1.77	3.88	46.59	46.59	23.29
	17,062.35	5,000	1,000	2.20	12	2.20	0.46	3.41	7.50	89.98	89.98	44.99
Total											**162.04**	**81.02**

NG_ext_Nwall	129.41	5,000	1,000	2.20	12	2.20	0.46	0.03	0.06	0.68	0.68	0.34
	7,290.59	5,000	1,000	2.20	12	2.20	0.46	1.46	3.20	38.45	38.45	19.22
	4,210.59	5,000	1,000	2.20	12	2.20	0.46	0.84	1.85	22.21	22.21	11.10
	11,398.82	5,000	1,000	2.20	12	2.20	0.46	2.28	5.01	60.11	60.11	30.06
Total											**121.45**	**60.72**
NG_int_Nwall	6,000.00	5,000	1,000	2.20	12	2.20	0.46	1.20	2.64	31.64		
Total											**31.64**	**15.82**

Section 3	Total Weight (kg)	Weight per trip (kg)	Weight of wagon/sledge (kg)	Distance (km)	Number of oxen (even)	hour/ trip	trips/ hour	# trips	# hours	oh	oh roundup even	ph round up even
	1,052,726	5,000	1,000	0.3	12	0.30	3.34	210.55	63.09	757.05	**757.05**	**378.53**
	473,250	5,000	1,000	0.3	12	0.30	3.34	94.65	28.36	340.33	**340.33**	**170.17**
Scenario I	191	5,000	1,000	0.3	12	0.30	3.34	0.04	0.01	0.14	0.14	0.07
	1,037	5,000	1,000	0.3	12	0.30	3.34	0.21	0.06	0.75	0.75	0.37
	60,823	5,000	1,000	0.3	12	0.30	3.34	12.16	3.65	43.74	43.74	21.87
	310,105	6,000	2,000	0.3	16	0.30	3.34	51.68	15.49	247.79	247.79	123.89
Total											**292.41**	**146.21**
Scenario II	243	5,000	1,000	0.3	12	0.30	3.34	0.05	0.01	0.17	0.17	0.09
	1,319	5,000	1,000	0.3	12	0.30	3.34	0.26	0.08	0.95	0.95	0.47
	77,345	5,000	1,000	0.3	12	0.30	3.34	15.47	4.64	55.62	55.62	27.81
	394,345	7,200	2,000	0.3	18	0.30	3.34	54.77	16.41	295.40	295.40	147.70
Total											**352.15**	**176.07**
Scenario III	6,369	5,000	1,000	0.3	12	0.30	3.34	1.27	0.38	4.58	4.58	2.29
	18,274	5,000	1,000	0.3	12	0.30	3.34	3.65	1.10	13.14	13.14	6.57
	104,308	5,000	1,000	0.3	12	0.30	3.34	20.86	6.25	75.01	75.01	37.51
	344,301	6,000	2,000	0.3	16	0.30	3.34	57.38	17.19	275.11	275.11	137.56
Total											**367.84**	**183.92**
Scenario IV	1,258	5,000	1,000	0.3	12	0.30	3.34	0.25	0.08	0.90	0.90	0.45

	5,695	5,000	1,000	0.3	12	0.30	3.34	1.14	0.34	4.10	4.10	2.05
	112,054	5,000	1,000	0.3	12	0.30	3.34	22.41	6.72	80.58	80.58	40.29
	354,274	6,500	2,000	0.3	18	0.30	3.34	54.50	16.33	277.64	293.97	146.98
Total											**379.55**	**189.77**
Scenario V	629	5,000	1,000	0.3	12	0.30	3.34	0.13	0.04	0.45	0.45	0.23
	2,848	5,000	1,000	0.3	12	0.30	3.34	0.57	0.17	2.05	2.05	1.02
	56,027	5,000	1,000	0.3	12	0.30	3.34	11.21	3.36	40.29	40.29	20.15
	354,274	6,500	2,000	0.3	18	0.30	3.34	54.50	16.33	277.64	293.97	146.98
Total											**336.76**	**168.38**
Scenario VI	3,053	5,000	1,000	0.3	12	0.30	3.34	0.61	0.18	2.20	2.20	1.10
	8,333	5,000	1,000	0.3	12	0.30	3.34	1.67	0.50	5.99	5.99	3.00
	79,862	5,000	1,000	0.3	12	0.30	3.34	15.97	4.79	57.43	57.43	28.72
	152,234	5,700	2,000	0.3	16	0.30	3.34	26.71	8.00	120.04	128.04	64.02
Total											**193.66**	**96.83**
Scenario VII	19,005	5,000	1,000	0.3	12	0.30	3.34	3.80	1.14	13.67	13.67	6.83
	19,241	5,000	1,000	0.3	12	0.30	3.34	3.85	1.15	13.84	13.84	6.92
	180,233	5,000	1,000	0.3	12	0.30	3.34	36.05	10.80	129.61	129.61	64.81
	173,917	5,700	2,000	0.3	16	0.30	3.34	30.51	9.14	137.14	146.28	73.14
Total											**303.40**	**151.70**
Scenario VIII	9,503	5,000	1,000	0.3	12	0.30	3.34	1.90	0.57	6.83	6.83	3.42
	9,621	5,000	1,000	0.3	12	0.30	3.34	1.92	0.58	6.92	6.92	3.46
	90,117	5,000	1,000	0.3	12	0.30	3.34	18.02	5.40	64.81	64.81	32.40
	173,917	5,700	2,000	0.3	16	0.30	3.34	30.51	9.14	137.14	146.28	73.14
Total											**224.84**	**112.42**

Section 4	Total Weight (kg)	Weight per trip (kg)	Weight of wagon/sledge (kg)	Distance (km)	Number of oxen (even)	hour/ trip	trips/ hour	# trips	# hours	oh	oh roundup even	ph round up even
	197,400	5,000	1,000	0.21	12	0.21	4.77	39.48	8.28	99.37	99.37	49.69
	62,250	5,000	1,000	0.21	12	0.21	4.77	12.45	2.61	31.34	31.34	15.67

Scenario I	38	5,000	1,000	0.21	12	0.21	4.77	0.01	0.00	0.02	0.02	0.01
	109	5,000	1,000	0.21	12	0.21	4.77	0.02	0.00	0.05	0.05	0.03
	6,900	5,000	1,000	0.21	12	0.21	4.77	1.38	0.29	3.47	3.47	1.74
	50,915	5,000	1,000	0.21	12	0.21	4.77	10.18	2.14	25.63	25.63	12.82
Total											**29.18**	**14.59**
Scenario II	41	5,000	1,000	0.21	12	0.21	4.77	0.01	0.00	0.02	0.02	0.01
	118	5,000	1,000	0.21	12	0.21	4.77	0.02	0.00	0.06	0.06	0.03
	7,411	5,000	1,000	0.21	12	0.21	4.77	1.48	0.31	3.73	3.73	1.87
	54,683	5,000	1,000	0.21	12	0.21	4.77	10.94	2.29	27.53	27.53	13.76
Total											**31.34**	**15.67**
Scenario III	582	5,000	1,000	0.21	12	0.21	4.77	0.12	0.02	0.29	0.29	0.15
	1,582	5,000	1,000	0.21	12	0.21	4.77	0.32	0.07	0.80	0.80	0.40
	7,181	5,000	1,000	0.21	12	0.21	4.77	1.44	0.30	3.61	3.61	1.81
	52,907	5,000	1,000	0.21	12	0.21	4.77	10.58	2.22	26.63	26.63	13.32
Total											**31.34**	**15.67**
Scenario IV	174	5,000	1,000	0.21	12	0.21	4.77	0.03	0.01	0.09	0.09	0.04
	629	5,000	1,000	0.21	12	0.21	4.77	0.13	0.03	0.32	0.32	0.16
	13,982	5,000	1,000	0.21	12	0.21	4.77	2.80	0.59	7.04	7.04	3.52
	100,280	5,000	1,000	0.21	12	0.21	4.77	20.06	4.21	50.48	50.48	25.24
Total											**57.92**	**28.96**
Scenario V	87	5,000	1,000	0.21	12	0.21	4.77	0.02	0.00	0.04	0.04	0.02
	315	5,000	1,000	0.21	12	0.21	4.77	0.06	0.01	0.16	0.16	0.08
	6,991	5,000	1,000	0.21	12	0.21	4.77	1.40	0.29	3.52	3.52	1.76
	100,280	5,000	1,000	0.21	12	0.21	4.77	20.06	4.21	50.48	50.48	25.24
Total											**54.20**	**27.10**
Scenario VI	3,712	5,000	1,000	0.21	12	0.21	4.77	0.74	0.16	1.87	1.87	0.93
	10,115	5,000	1,000	0.21	12	0.21	4.77	2.02	0.42	5.09	5.09	2.55
	17,968	5,000	1,000	0.21	12	0.21	4.77	3.59	0.75	9.05	9.05	4.52
	16,972	5,000	1,000	0.21	12	0.21	4.77	3.39	0.71	8.54	8.54	4.27

Total											**24.55**	**12.27**
Scenario VII	25,585	5,000	1,000	0.21	12	0.21	4.77	5.12	1.07	12.88	12.88	6.44
	24,535	5,000	1,000	0.21	12	0.21	4.77	4.91	1.03	12.35	12.35	6.18
	34,762	5,000	1,000	0.21	12	0.21	4.77	6.95	1.46	17.50	17.50	8.75
	16,713	5,000	1,000	0.21	12	0.21	4.77	3.34	0.70	8.41	8.41	4.21
Total											**51.14**	**25.57**
Scenario VIII	12,793	5,000	1,000	0.21	12	0.21	4.77	2.56	0.54	6.44	6.44	3.22
	12,268	5,000	1,000	0.21	12	0.21	4.77	2.45	0.51	6.18	6.18	3.09
	17,381	5,000	1,000	0.21	12	0.21	4.77	3.48	0.73	8.75	8.75	4.37
	16,713	5,000	1,000	0.21	12	0.21	4.77	3.34	0.70	8.41	8.41	4.21
Total											**29.78**	**14.89**

Teichos Dymaion

Section 1	Total Weight (kg)	Weight per trip (kg)	Weight of wagon/sledge (kg)	Distance (km)	Number of oxen (even)	hour/ trip	trips/ hour	# trips	# hours	oh	oh roundup even	ph round up even
	449,400	5,000	1,000	0.1	12	0.10	10.01	89.88	8.98	107.73	107.73	53.86
	354,000	5,000	1,000	0.1	12	0.10	10.01	70.80	7.07	84.86	84.86	42.43
Scenario I	173	5,000	1,000	0.1	12	0.10	10.01	0.03	0.00	0.04	0.04	0.02
	1,467	5,000	1,000	0.1	12	0.10	10.01	0.29	0.03	0.35	0.35	0.18
	38,458	5,000	1,000	0.1	12	0.10	10.01	7.69	0.77	9.22	9.22	4.61
	468,749	5,000	1,000	0.1	12	0.10	10.01	93.75	9.36	112.37	112.37	56.18
Total											**121.98**	**60.99**
Scenario II	121	5,000	1,000	0.1	12	0.10	10.01	0.02	0.00	0.03	0.03	0.01
	1,021	5,000	1,000	0.1	12	0.10	10.01	0.20	0.02	0.24	0.24	0.12
	26,755	5,000	1,000	0.1	12	0.10	10.01	5.35	0.53	6.41	6.41	3.21
	326,105	5,000	1,000	0.1	12	0.10	10.01	65.22	6.51	78.17	78.17	39.09
Total											**84.86**	**42.43**
Scenario III	4,253	5,000	1,000	0.1	12	0.10	10.01	0.85	0.08	1.02	1.02	0.51

	14,375	5,000	1,000	0.1	12	0.10	10.01	2.88	0.29	3.45	3.45	1.72
	84,959	5,000	1,000	0.1	12	0.10	10.01	16.99	1.70	20.37	20.37	10.18
	250,415	5,000	1,000	0.1	12	0.10	10.01	50.08	5.00	60.03	60.03	30.01
Total											**84.86**	**42.43**
Scenario IV	877	5,000	1,000	0.1	12	0.10	10.01	0.18	0.02	0.21	0.21	0.11
	7,662	5,000	1,000	0.1	12	0.10	10.01	1.53	0.15	1.84	1.84	0.92
	70,404	5,000	1,000	0.1	12	0.10	10.01	14.08	1.41	16.88	16.88	8.44
	529,613	6,230	2,000	0.1	16	0.10	10.01	85.01	8.49	135.85	135.85	67.93
Total											**154.78**	**77.39**
Scenario V	439	5,000	1,000	0.1	12	0.10	10.01	0.09	0.01	0.11	0.11	0.05
	3,831	5,000	1,000	0.1	12	0.10	10.01	0.77	0.08	0.92	0.92	0.46
	35,202	5,000	1,000	0.1	12	0.10	10.01	7.04	0.70	8.44	8.44	4.22
	529,613	6,230	2,000	0.1	16	0.10	10.01	85.01	8.49	135.85	135.85	67.93
Total											**145.32**	**72.66**
Scenario VI	7,271	5,000	1,000	0.1	12	0.10	10.01	1.45	0.15	1.74	1.74	0.87
	31,802	5,000	1,000	0.1	12	0.10	10.01	6.36	0.64	7.62	7.62	3.81
	84,600	5,000	1,000	0.1	12	0.10	10.01	16.92	1.69	20.28	20.28	10.14
	55,147	5,000	1,000	0.1	12	0.10	10.01	11.03	1.10	13.22	13.22	6.61
Total											**42.87**	**21.43**
Scenario VII	54,764	5,000	1,000	0.1	12	0.10	10.01	10.95	1.09	13.13	13.13	6.56
	77,807	5,000	1,000	0.1	12	0.10	10.01	15.56	1.55	18.65	18.65	9.33
	179,083	5,000	1,000	0.1	12	0.10	10.01	35.82	3.58	42.93	42.93	21.46
	62,308	6,230	2,000	0.1	16	0.10	10.01	10.00	1.00	15.98	15.98	7.99
Total											**90.69**	**45.35**
Scenario VIII	27,382	5,000	1,000	0.1	12	0.10	10.01	5.48	0.55	6.56	6.56	3.28
	38,904	5,000	1,000	0.1	12	0.10	10.01	7.78	0.78	9.33	9.33	4.66
	89,542	5,000	1,000	0.1	12	0.10	10.01	17.91	1.79	21.46	21.46	10.73
	62,308	6,230	2,000	0.1	16	0.10	10.01	10.00	1.00	15.98	15.98	7.99
Total											**53.34**	**26.67**

Section 2	Total Weight (kg)	Weight per trip (kg)	Weight of wagon/sledge (kg)	Distance (km)	Number of oxen (even)	hour/ trip	trips/ hour	# trips	# hours	oh	oh roundup even	ph round up even
	424,970	5,000	1,000	0.1	12	0.10	10.01	84.99	8.49	101.87	101.87	50.94
	199,750	5,000	1,000	0.1	12	0.10	10.01	39.95	3.99	47.88	47.88	23.94
Scenario I	137	5,000	1,000	0.1	12	0.10	10.01	0.03	0.00	0.03	0.03	0.02
	715	5,000	1,000	0.1	12	0.10	10.01	0.14	0.01	0.17	0.17	0.09
	9,627	5,000	1,000	0.1	12	0.10	10.01	1.93	0.19	2.31	2.31	1.15
	478,194	5,000	1,000	0.1	12	0.10	10.01	95.64	9.55	114.63	114.63	57.31
Total											**117.14**	**58.57**
Scenario II	56	5,000	1,000	0.1	12	0.10	10.01	0.01	0.00	0.01	0.01	0.01
	292	5,000	1,000	0.1	12	0.10	10.01	0.06	0.01	0.07	0.07	0.03
	3,934	5,000	1,000	0.1	12	0.10	10.01	0.79	0.08	0.94	0.94	0.47
	195,419	5,000	1,000	0.1	12	0.10	10.01	39.08	3.90	46.84	46.84	23.42
Total											**47.87**	**23.94**
Scenario III	2,377	5,000	1,000	0.1	12	0.10	10.01	0.48	0.05	0.57	0.57	0.28
	6,741	5,000	1,000	0.1	12	0.10	10.01	1.35	0.13	1.62	1.62	0.81
	18,316	5,000	1,000	0.1	12	0.10	10.01	3.66	0.37	4.39	4.39	2.20
	172,269	5,000	1,000	0.1	12	0.10	10.01	34.45	3.44	41.30	41.30	20.65
Total											**47.87**	**23.94**
Scenario IV	463	5,000	1,000	0.1	12	0.10	10.01	0.09	0.01	0.11	0.11	0.06
	1,958	5,000	1,000	0.1	12	0.10	10.01	0.39	0.04	0.47	0.47	0.23
	8,668	5,000	1,000	0.1	12	0.10	10.01	1.73	0.17	2.08	2.08	1.04
	536,431	6,230	2,000	0.1	16	0.10	10.01	86.10	8.60	137.60	137.60	68.80
Total											**140.26**	**70.13**
Scenario V	232	5,000	1,000	0.1	12	0.10	10.01	0.05	0.00	0.06	0.06	0.03
	979	5,000	1,000	0.1	12	0.10	10.01	0.20	0.02	0.23	0.23	0.12
	4,334	5,000	1,000	0.1	12	0.10	10.01	0.87	0.09	1.04	1.04	0.52
	536,431	6,230	2,000	0.1	16	0.10	10.01	86.10	8.60	137.60	137.60	68.80

Total											**138.93**	**69.47**
Scenario VI	8,732	5,000	1,000	0.1	12	0.10	10.01	1.75	0.17	2.09	2.09	1.05
	15,960	5,000	1,000	0.1	12	0.10	10.01	3.19	0.32	3.83	3.83	1.91
	47,115	5,000	1,000	0.1	12	0.10	10.01	9.42	0.94	11.29	11.29	5.65
	94,381	5,000	1,000	0.1	12	0.10	10.01	18.88	1.89	22.62	22.62	11.31
Total											**39.84**	**19.92**
Scenario VII	46,859	5,000	1,000	0.1	12	0.10	10.01	9.37	0.94	11.23	11.23	5.62
	30,759	5,000	1,000	0.1	12	0.10	10.01	6.15	0.61	7.37	7.37	3.69
	86,186	5,000	1,000	0.1	12	0.10	10.01	17.24	1.72	20.66	20.66	10.33
	88,229	6,230	2,000	0.1	16	0.10	10.01	14.16	1.41	22.63	22.63	11.32
Total											**61.90**	**30.95**
Scenario VIII	23,430	5,000	1,000	0.1	12	0.10	10.01	4.69	0.47	5.62	5.62	2.81
	15,380	5,000	1,000	0.1	12	0.10	10.01	3.08	0.31	3.69	3.69	1.84
	43,093	5,000	1,000	0.1	12	0.10	10.01	8.62	0.86	10.33	10.33	5.16
	88,229	6,230	2,000	0.1	16	0.10	10.01	14.16	1.41	22.63	22.63	11.32
Total											**42.27**	**21.13**

Section 3	Total Weight (kg)	Weight per trip (kg)	Weight of wagon/sledge (kg)	Distance (km)	Number of oxen (even)	hour/ trip	trips/ hour	# trips	# hours	oh	oh roundup even	ph round up even
	363,538	5,000	1,000	0.1	12	0.10	10.01	72.71	7.26	87.14	87.14	43.57
	245,000	5,000	1,000	0.1	12	0.10	10.01	49.00	4.89	58.73	58.73	29.36
Scenario I	113	5,000	1,000	0.1	12	0.10	10.01	0.02	0.00	0.03	0.03	0.01
	813	5,000	1,000	0.1	12	0.10	10.01	0.16	0.02	0.19	0.19	0.10
	26,144	5,000	1,000	0.1	12	0.10	10.01	5.23	0.52	6.27	6.27	3.13
	542,318	5,500	1,000	0.1	14	0.10	10.01	98.60	9.85	128.03	137.88	68.94
Total											**134.52**	**72.18**
Scenario II	49	5,000	1,000	0.1	12	0.10	10.01	0.01	0.00	0.01	0.01	0.01
	350	5,000	1,000	0.1	12	0.10	10.01	0.07	0.01	0.08	0.08	0.04

	11,254	5,000	1,000	0.1	12	0.10	10.01	2.25	0.22	2.70	2.70	1.35
	233,448	5,000	1,000	0.1	12	0.10	10.01	46.69	4.66	55.96	55.96	27.98
Total											**58.75**	**29.38**
Scenario III	1,870	5,000	1,000	0.1	12	0.10	10.01	0.37	0.04	0.45	0.45	0.22
	6,712	5,000	1,000	0.1	12	0.10	10.01	1.34	0.13	1.61	1.61	0.80
	32,622	5,000	1,000	0.1	12	0.10	10.01	6.52	0.65	7.82	7.82	3.91
	203,897	5,000	1,000	0.1	12	0.10	10.01	40.78	4.07	48.88	48.88	24.44
Total											**58.75**	**29.38**
Scenario IV	425	5,000	1,000	0.1	12	0.10	10.01	0.09	0.01	0.10	0.10	0.05
	2,930	5,000	1,000	0.1	12	0.10	10.01	0.59	0.06	0.70	0.70	0.35
	47,826	5,000	1,000	0.1	12	0.10	10.01	9.57	0.96	11.46	11.46	5.73
	802,773	8,200	2,000	0.1	20	0.10	10.01	97.90	9.78	195.56	195.56	97.78
Total											**207.83**	**103.92**
Scenario V	213	5,000	1,000	0.1	12	0.10	10.01	0.04	0.00	0.05	0.05	0.03
	1,465	5,000	1,000	0.1	12	0.10	10.01	0.29	0.03	0.35	0.35	0.18
	23,913	5,000	1,000	0.1	12	0.10	10.01	4.78	0.48	5.73	5.73	2.87
	802,773	8,200	2,000	0.1	20	0.10	10.01	97.90	9.78	195.56	195.56	97.78
Total											**201.70**	**100.85**
Scenario VI	11,721	5,000	1,000	0.1	12	0.10	10.01	2.34	0.23	2.81	2.81	1.40
	38,104	5,000	1,000	0.1	12	0.10	10.01	7.62	0.76	9.13	9.13	4.57
	57,298	5,000	1,000	0.1	12	0.10	10.01	11.46	1.14	13.74	13.74	6.87
	82,170	5,500	1,000	0.1	14	0.10	10.01	14.94	1.49	19.40	20.89	10.45
Total											**45.08**	**23.28**
Scenario VII	94,574	5,000	1,000	0.1	12	0.10	10.01	18.91	1.89	22.67	22.67	11.34
	105,189	5,000	1,000	0.1	12	0.10	10.01	21.04	2.10	25.22	25.22	12.61
	135,535	5,000	1,000	0.1	12	0.10	10.01	27.11	2.71	32.49	32.49	16.24
	121,633	8,200	2,000	0.1	20	0.10	10.01	14.83	1.48	29.63	29.63	14.82
Total											**110.01**	**55.00**
Scenario VIII	47,287	5,000	1,000	0.1	12	0.10	10.01	9.46	0.94	11.34	11.34	5.67
	52,595	5,000	1,000	0.1	12	0.10	10.01	10.52	1.05	12.61	12.61	6.30

	67,768	5,000	1,000	0.1	12	0.10	10.01	13.55	1.35	16.24	16.24	8.12
	121,633	8,200	2,000	0.1	20	0.10	10.01	14.83	1.48	29.63	29.63	14.82
Total											**69.82**	**34.91**
Section 4	Total Weight (kg)	Weight per trip (kg)	Weight of wagon/sledge (kg)	Distance (km)	Number of oxen (even)	hour/ trip	trips/ hour	# trips	# hours	oh	oh roundup even	ph round up even
	160,356	5,000	1,000	0.1	12	0.10	10.01	32.07	3.20	38.44	38.44	19.22
	84,250	5,000	1,000	0.1	12	0.10	10.01	16.85	1.68	20.20	20.20	10.10
Scenario I	60	5,000	1,000	0.1	12	0.10	10.01	0.01	0.00	0.01	0.01	0.01
	309	5,000	1,000	0.1	12	0.10	10.01	0.06	0.01	0.07	0.07	0.04
	5,356	5,000	1,000	0.1	12	0.10	10.01	1.07	0.11	1.28	1.28	0.64
	203,549	5,000	1,000	0.1	12	0.10	10.01	40.71	4.07	48.79	48.79	24.40
Total											**50.17**	**25.08**
Scenario II	24	5,000	1,000	0.1	12	0.10	10.01	0.00	0.00	0.01	0.01	0.00
	125	5,000	1,000	0.1	12	0.10	10.01	0.03	0.00	0.03	0.03	0.01
	2,157	5,000	1,000	0.1	12	0.10	10.01	0.43	0.04	0.52	0.52	0.26
	81,946	5,000	1,000	0.1	12	0.10	10.01	16.39	1.64	19.64	19.64	9.82
Total											**20.20**	**10.10**
Scenario III	837	5,000	1,000	0.1	12	0.10	10.01	0.17	0.02	0.20	0.20	0.10
	2,451	5,000	1,000	0.1	12	0.10	10.01	0.49	0.05	0.59	0.59	0.29
	7,553	5,000	1,000	0.1	12	0.10	10.01	1.51	0.15	1.81	1.81	0.91
	73,411	5,000	1,000	0.1	12	0.10	10.01	14.68	1.47	17.60	17.60	8.80
Total											**20.20**	**10.10**
Scenario IV	196	5,000	1,000	0.1	12	0.10	10.01	0.04	0.00	0.05	0.05	0.02
	824	5,000	1,000	0.1	12	0.10	10.01	0.16	0.02	0.20	0.20	0.10
	5,339	5,000	1,000	0.1	12	0.10	10.01	1.07	0.11	1.28	1.28	0.64
	221,110	5,000	1,000	0.1	12	0.10	10.01	44.22	4.42	53.00	53.00	26.50
Total											**54.53**	**27.26**

Scenario V	98	5,000	1,000	0.1	12	0.10	10.01	0.02	0.00	0.02	0.02	0.01
	412	5,000	1,000	0.1	12	0.10	10.01	0.08	0.01	0.10	0.10	0.05
	2,670	5,000	1,000	0.1	12	0.10	10.01	0.53	0.05	0.64	0.64	0.32
	221,110	5,000	1,000	0.1	12	0.10	10.01	44.22	4.42	53.00	53.00	26.50
Total											**53.77**	**26.88**
Scenario VI	5,438	5,000	1,000	0.1	12	0.10	10.01	1.09	0.11	1.30	1.30	0.65
	7,401	5,000	1,000	0.1	12	0.10	10.01	1.48	0.15	1.77	1.77	0.89
	28,339	5,000	1,000	0.1	12	0.10	10.01	5.67	0.57	6.79	6.79	3.40
	26,550	5,000	1,000	0.1	12	0.10	10.01	5.31	0.53	6.36	6.36	3.18
Total											**16.24**	**8.12**
Scenario VII	34,275	5,000	1,000	0.1	12	0.10	10.01	6.86	0.68	8.22	8.22	4.11
	15,357	5,000	1,000	0.1	12	0.10	10.01	3.07	0.31	3.68	3.68	1.84
	51,324	5,000	1,000	0.1	12	0.10	10.01	10.26	1.03	12.30	12.30	6.15
	28,841	5,000	1,000	0.1	12	0.10	10.01	5.77	0.58	6.91	6.91	3.46
Total											**31.11**	**15.56**
Scenario VIII	17,138	5,000	1,000	0.1	12	0.10	10.01	3.43	0.34	4.11	4.11	2.05
	7,679	5,000	1,000	0.1	12	0.10	10.01	1.54	0.15	1.84	1.84	0.92
	25,662	5,000	1,000	0.1	12	0.10	10.01	5.13	0.51	6.15	6.15	3.08
	28,841	5,000	1,000	0.1	12	0.10	10.01	5.77	0.58	6.91	6.91	3.46
Total											**19.01**	**9.51**

Table 2. Overview of costs per section and scenario

Since no reconstructions of the volume are used for sections 1 and 2 at Mycenae, these are not present in the table below.

Mycenae

Section 3

Scenario	Vol. per face	Vol. fill	Ratio face/fill	Oxen hours	Person hours	Max. # oxen	OH face x ratio fill	total oh 2x face + fill	Vol. fill no voidage	Weight rubble fill at 1400kg/m3	OH fill	total oh 2x face + fill	ph minimum	ph maximum
I	148.8	680.5	4.6	292.4	146.2	16	1,337.2	1,922.0	899.4	1,259,160.0	888.2	1,473.0	736.5	961.0
II	189.3	646.6	3.4	352.1	176.1	18	1,202.7	1,906.9	818.4	1,145,760.0	855.8	1,560.0	780.0	953.4
III	189.3	646.6	3.4	367.8	183.9	16	1,256.3	1,991.9	818.4	1,145,760.0	855.8	1,591.4	795.7	996.0
IV	189.3	614.9	3.2	379.5	189.8	18	1,232.6	1,991.6	818.4	1,145,732.0	870.4	1,629.4	814.7	995.8
V	165.5	662.5	4.0	336.8	168.4	18	1,348.2	2,021.8	866.0	1,212,400.0	897.0	1,570.6	785.3	1,010.9
VI	97.4	798.7	8.2	193.7	96.8	16	1,588.4	1,975.8	1,002.2	1,403,080.0	1,045.4	1,432.8	716.4	987.9
VII	157.0	679.5	4.3	303.4	151.7	16	1,313.1	1,919.9	883.0	1,236,200.0	949.5	1,556.3	778.2	960.0
VIII	113.3	766.9	6.8	224.8	112.4	16	1,521.6	1,971.2	970.4	1,358,560.0	1,028.6	1,478.2	739.1	985.6
One size	189.3	614.9	3.2	340.3	170.2	12	1,105.4	1,786.0	818.4	1,145,760.0	855.8	1,536.4	768.2	893.0

Section 4

Scenario	Vol. per face	Vol. fill	Ratio face/fill	Oxen hours	Person hours	Max. # oxen	OH face x ratio fill	total oh 2x face + fill	Vol. fill no voidage	Weight rubble fill at 1400kg/m3	OH fill	total oh 2x face + fill	ph minimum	ph maximum
I	23.2	144.4	6.2	29.2	14.6	12	181.7	240.1	183.4	256,760.0	129.3	187.7	93.9	120.0
II	24.9	141.0	5.7	31.3	15.7	12	177.2	239.8	180.0	252,000.0	126.9	189.5	94.8	119.9
III	24.9	141.0	5.7	31.3	35.9	12	177.2	239.8	180.0	252,000.0	126.9	189.5	94.8	119.9
IV	46.0	98.8	2.1	57.9	29.0	12	124.3	240.1	137.8	192,920.0	97.1	212.9	106.5	120.0
V	43.1	104.6	2.4	54.2	27.1	12	131.5	239.9	143.6	201,040.0	101.2	209.6	104.8	119.9
VI	19.5	151.8	7.8	24.5	12.3	12	190.7	239.7	190.8	267,120.0	134.5	183.5	91.8	119.8
VII	40.6	109.6	2.7	51.1	25.6	12	137.9	240.1	148.6	208,040.0	104.7	206.9	103.5	120.0

VIII	23.7	143.4	6.0	29.8	14.9	12	180.2	239.8	182.4	255,360.0	128.5	188.1	94.1	119.9
One size	24.9	141.0	5.7	31.3	15.7	12	177.2	239.8	180.0	252,000.0	126.9	189.5	94.8	119.9

Teichos Dymaion

Section 1

Scenario	Vol. per face	Vol. fill	Ratio face/fill	Oxen hours	Person hours	Max. # oxen	OH face x ratio fill	total oh 2x face + fill	Vol. fill no voidage	Weight rubble fill at 1400kg/m3	OH fill	total oh 2x face + fill	ph minimum	ph maximum
I	203.5	197.2	1.0	122.0	61.0	12	118.2	362.2	237.6	332,694.0	79.8	323.8	161.9	181.1
II	141.6	321.0	2.3	84.9	42.4	12	192.5	362.3	386.8	541,513.3	129.8	299.6	149.8	181.1
III	141.6	321.0	2.3	84.9	42.4	12	192.5	362.3	386.8	541,513.3	129.8	299.6	149.8	181.1
IV	234.4	135.4	0.6	154.8	77.4	16	89.4	399.0	163.2	228,453.0	54.8	364.4	182.2	199.5
V	227.6	149.0	0.7	145.3	72.7	16	95.1	385.7	179.6	251,392.8	60.3	350.9	175.5	192.9
VI	71.5	461.2	6.5	42.9	21.4	12	276.7	362.5	555.7	777,995.2	186.5	272.3	136.2	181.3
VII	149.6	305.0	2.0	90.7	45.3	16	184.9	366.3	367.5	514,525.3	123.3	304.7	152.4	183.2
VIII	87.3	429.6	4.9	53.3	26.7	16	262.3	368.9	517.6	724,694.0	173.7	280.3	140.2	184.5
One size	141.6	321.0	2.3	84.9	42.4	12	192.5	362.3	386.8	541,513.3	129.8	299.6	149.8	181.1

Section 2

Scenario	Vol. per face	Vol. fill	Ratio face/fill	Oxen hours	Person hours	Max. # oxen	OH face x ratio fill	total oh 2x face + fill	Vol. fill no voidage	Weight rubble fill at 1400kg/m3	OH fill	total oh 2x face + fill	ph minimum	ph maximum
I	195.5	72.4	0.4	117.1	58.6	12	43.3	277.5	87.2	122,036.1	29.3	263.5	131.8	138.8
II	79.9	303.6	3.8	47.9	23.9	12	182.0	277.8	365.7	512,012.0	122.7	218.5	109.3	138.9
III	79.9	303.6	3.8	47.9	12.9	12	182.0	277.8	365.7	512,012.0	122.7	218.5	109.3	138.9
IV	219.0	25.4	0.1	140.3	70.1	16	16.2	296.8	30.5	42,759.0	10.2	290.8	145.4	148.4
V	216.8	29.8	0.1	138.9	69.5	16	19.1	296.9	35.8	50,180.7	12.0	289.8	144.9	148.4
VI	66.5	330.4	5.0	39.8	19.9	12	197.7	277.3	398.0	557,216.9	133.6	213.2	106.6	138.7
VII	100.8	261.8	2.6	61.9	30.9	16	160.7	284.5	315.4	441,506.0	105.8	229.6	114.8	142.3
VIII	68.1	327.2	4.8	42.3	21.1	16	203.2	287.8	394.2	551,819.3	132.3	216.9	108.5	143.9

One size	79.9	303.6	3.8	47.9	23.9	12	182.0	277.8	365.7	512,012.0	122.7	218.5	109.3	138.9

Section 3

Scenario	Vol. per face	Vol. fill	Ratio face/fill	Oxen hours	Person hours	Max. # oxen	OH face x ratio fill	total oh 2x face + fill	Vol. fill no voidage	Weight rubble fill at 1400kg/m3	OH fill	total oh 2x face + fill	ph minimum	ph maximum
I	227.8	0.1	0.0	134.5	72.2	14	0.0	269.0	0.1	118.1	0.0	269.0	134.5	134.5
II	98.0	259.7	2.6	58.8	29.4	12	155.8	273.4	312.9	437,997.6	105.0	222.6	111.3	136.7
III	98.0	259.7	2.6	58.8	29.4	12	155.8	273.4	312.9	437,997.6	105.0	222.6	111.3	136.7
IV	341.6	-227.5	-0.7	207.8	103.9	20	-138.4	277.2	-274.1	-383,785.5		415.6	207.8	138.6
V	331.3	-206.9	-0.6	201.7	100.8	20	-126.0	277.4	-249.3	-349,038.6		403.4	201.7	138.7
VI	75.7	304.3	4.0	45.1	23.3	14	181.3	271.5	366.6	513,226.5	123.0	213.2	106.6	135.7
VII	182.8	90.1	0.5	110.0	55.0	20	54.2	274.2	108.5	151,925.3	36.4	256.4	128.2	137.1
VIII	115.7	224.3	1.9	69.8	34.9	20	135.3	274.9	270.2	378,286.7	90.7	230.3	115.2	137.4
One size	98.0	259.7	2.6	58.8	29.3	12	155.8	273.4	312.9	437,997.6	105.0	222.6	111.3	136.7

Section 4

Scenario	Vol. per face	Vol. fill	Ratio face/fill	Oxen hours	Person hours	Max. # oxen	OH face x ratio fill	total oh 2x face + fill	Vol. fill no voidage	Weight rubble fill at 1400kg/m3	OH fill	total oh 2x face + fill	ph minimum	ph maximum
I	83.7	14.5	0.2	50.2	25.1	12	8.7	109.1	17.5	24,525.3	5.9	106.3	53.2	54.6
II	33.7	114.5	3.4	20.2	10.1	12	68.7	109.1	138.0	193,200.0	46.3	86.7	43.4	54.5
III	33.7	114.5	3.4	20.2	10.1	12	68.7	109.1	138.0	193,200.0	46.3	86.7	43.4	54.5
IV	91.0	-0.1	0.0	54.5	27.3	12	0.0	109.0	-0.1	-101.2		109.0	54.5	54.5
V	89.7	2.5	0.0	53.8	26.9	12	1.5	109.1	3.1	4,284.3	1.0	108.6	54.3	54.6
VI	27.7	126.5	4.6	16.2	8.1	12	74.0	106.4	152.5	213,441.0	51.2	83.6	41.8	53.2
VII	51.9	78.1	1.5	31.1	15.6	12	46.8	109.0	94.1	131,802.4	31.6	93.8	46.9	54.5
VIII	31.7	118.5	3.7	19.0	9.5	12	71.0	109.0	142.8	199,947.0	47.9	85.9	43.0	54.5
One size	33.7	114.5	3.4	20.2	10.1	12	68.7	109.1	138.0	193,200.0	46.3	86.7	43.4	54.5

Table 3. Overview of the costs involved with loading and unloading

Mycenae

Section 3				De Haan			Levering			Ramp loading		
Scenario	Vol. per face	Vol. fill	Ratio Face/fill	# trips / face	# trips fill	ph total	ph / face	ph fill	ph total	ph / face	ph fill	ph total
I	148.8	680.5	4.573253	64	292.6882	2524.129	228	1042.702	1498.702	24	109.7581	157.7581
II	189.3	646.6	3.415742	71	242.5177	2307.106	257	877.8457	1391.846	30	102.4723	162.4723
III	189.3	646.6	3.415742	83	283.5066	2697.04		0	0		0	0
IV	189.31	614.89	3.248059	78	253.3486	2456.091	302	980.9137	1584.914	30	97.44176	157.4418
V	165.5	662.51	4.003082	66	264.2034	2377.22	228	912.7026	1368.703	42	168.1294	252.1294
VI	97.4	798.71	8.200308	45	369.0139	2754.083	261	2140.28	2662.28	30	246.0092	306.0092
VII	157	679.51	4.328089	74	320.2786	2809.672	261	1129.631	1651.631	48	207.7483	303.7483
VIII	113.3	766.91	6.768844	52	351.9799	2735.879	261	1766.668	2288.668	37	250.4472	324.4472
One size	189.3	614.91	3.248336		496.8	2980.8			1524.9			160

Section 4				De Haan			Levering			Ramp loading		
Scenario	Vol. per face	Vol. fill	Ratio Face/fill	# trips / face	# trips fill	ph total	ph / face	ph fill	ph total	ph / face	ph fill	ph total
I	23.2	144.4	6.221983	12	74.66379	591.9828	116	721.75	953.75	4	24.88793	32.88793
II	24.9	141.0	5.660643	12	67.92771	551.5663	116	656.6345	888.6345	4	22.64257	30.64257
III	24.9	141.0	5.660643	12	67.92771	551.5663		0	0		0	0
IV	46	98.8	2.146739	23	49.375	572.25	228	489.4565	945.4565	8	17.17391	33.17391
V	43.1	104.6	2.425754	22	53.36659	584.1995	116	281.3875	513.3875	7	16.98028	30.98028
VI	19.5	151.8	7.782051	10	77.82051	586.9231	120	933.8462	1173.846	3	23.34615	29.34615
VII	40.6	109.6	2.698276	20	53.96552	563.7931	125	337.2845	587.2845	7	18.88793	32.88793
VIII	23.7	143.4	6.048523	12	72.58228	579.4937	123	743.9684	989.9684	4	24.19409	32.19409
One size	24.9	141.0	5.660643		95.4	572.4			292.8			30.7

Teichos Dymaion

Section 1				De Haan			Levering			Ramp loading		
Scenario	Vol. per face	Vol. fill	Ratio in volume	# trips / face	# trips fill	ph total	ph / face	ph fill	ph total	ph / face	ph fill	ph total
I	203.5	197.2	0.969238	102	98.86231	1817.174	576.6	558.8628	1712.063	33.3	32.27564	98.87564
II	141.6	321.0	2.267232	71	160.9734	1817.841	498.3	1129.762	2126.362	23.2	52.59977	98.99977
III	141.6	321.0	2.267232	71	160.9734	1817.841		0	0		0	0
IV	234.4	135.4	0.577816	101	58.35939	1562.156	770.9	445.4381	1987.238	39.5	22.82372	101.8237
V	227.6	149.0	0.654833	93	60.89947	1481.397	729.8	477.8972	1937.497	36.8	24.09786	97.69786
VI	71.5	461.2	6.450909	35	225.7818	1774.691	336.8	2172.666	2846.266	11.9	76.76582	100.5658
VII	149.6	305.0	2.039037	73	148.8497	1769.098	747	1523.161	3017.161	24	48.9369	96.9369
VIII	87.3	429.6	4.92142	42	206.6997	1744.198	327.6	1612.257	2267.457	14.9	73.32916	103.1292
One size	141.6	321.0	2.267232		325.4	1952.4			998.8			107.8

Section 2				De Haan			Levering			Ramp loading		
Scenario	Vol. per face	Vol. fill	Ratio in volume	# trips / face	# trips fill	ph total	ph / face	ph fill	ph total	ph / face	ph fill	ph total
I	195.5	72.35	0.370077	98	36.26752	1393.605	620.2	229.5216	1469.922	33	12.21253	78.21253
II	79.9	303.55	3.799124	40	151.965	1391.79	342.3	1300.44	1985.04	14.8	56.22703	85.82703
III	79.9	303.55	3.799124	40	151.965	1391.79		0	0		0	0
IV	219	25.35	0.115753	89	10.30205	1129.812	620.4	71.81342	1312.613	37.2	4.306027	78.70603
V	216.8	29.75	0.137223	88	12.07565	1128.454	620.1	85.09214	1325.292	36.5	5.008649	78.00865
VI	66.5	330.35	4.967669	34	168.9008	1421.405	300.1	1490.798	2090.998	12.3	61.10233	85.70233
VII	100.8	261.75	2.596726	47	122.0461	1296.277	320.5	832.2507	1473.251	17.4	45.18304	79.98304
VIII	68.1	327.15	4.803965	31	148.9229	1265.537	301.9	1450.317	2054.117	11.7	56.20639	79.60639
One size	79.9	303.55	3.799124		231.7	1390.2			711.2			76.7

Section 3				De Haan			Levering			Ramp loading		
Scenario	Vol. per face	Vol. fill	Ratio in volume	# trips / face	# trips fill	ph total	ph / face	ph fill	ph total	ph / face	ph fill	ph total
I	227.8	0.07	0.000307	104	0.031958	1248.192	716.7	0.220233	1433.62	37.2	0.011431	74.41143
II	98	259.67	2.649694	49	129.835	1367.01	270.9	717.8021	1259.602	17.2	45.57473	79.97473
III	98	259.67	2.649694	49	129.835	1367.01		0	0		0	0
IV	341.6	-227.53	-0.66607	108	-71.9357	864.3857	1186.4	-790.227	1582.573	55	-36.6339	73.36607
V	331.3	-206.93	-0.6246	103	-64.3338	849.9972	1120.5	-699.864	1541.136	53.7	-33.541	73.85898
VI	75.7	304.27	4.019419	37	148.7185	1336.311	269.1	1081.626	1619.826	12.8	51.44856	77.04856
VII	182.8	90.07	0.492724	82	40.40339	1226.42	974.2	480.012	2428.412	30	14.78173	74.78173
VIII	115.7	224.27	1.938375	48	93.04201	1134.252	350.5	679.4005	1380.4	20.5	39.73669	80.73669
One size	98	259.67	2.649694		227.8	1366.8			699.4			75.5

Section 4				De Haan			Levering			Ramp loading		
Scenario	Vol. per face	Vol. fill	Ratio in volume	# trips / face	# trips fill	ph total	ph / face	ph fill	ph total	ph / face	ph fill	ph total
I	83.7	14.54	0.173716	42	7.296057	547.7763	188.4	32.72803	409.528	14.3	2.484134	31.08413
II	33.7	114.54	3.398813	17	57.77982	550.6789	155.7	529.1952	840.5952	6.3	21.41252	34.01252
III	33.7	114.54	3.398813	17	57.77982	550.6789		0	0		0	0
IV	91	-0.06	-0.00066	46	-0.03033	551.818	282.3	-0.18613	564.4139	15.2	-0.01002	30.38998
V	89.7	2.54	0.028317	45	1.274247	547.6455	281.8	7.979621	571.5796	14.9	0.421918	30.22192
VI	27.7	126.54	4.568231	14	63.95523	551.7314	125.1	571.4857	821.6857	5	22.84116	32.84116
VII	51.9	78.14	1.505588	26	39.14528	546.8717	269	405.0031	943.0031	13.7	20.62655	48.02655
VIII	31.7	118.54	3.739432	16	59.83091	550.9855	250.7	937.4756	1438.876	9	33.65489	51.65489
One size	33.7	114.54	3.398813		91	546			1495			30.1

Appendix 5 Overview of the assembly calculations

This appendix comprises two tables: table 1 shows the costs for assembly based on the reconstruction of the building process as described in chapter 7, for all sections and scenarios. Table 2 shows calculated costs using the combination of the rates of Mayes and Murakami, see chapter 7. All labour is in person-hours and all volumes are in cubic metres. Since no reconstructions of the volume are used for sections 1 and 2 at Mycenae, these are not present in the table below (they are described in chapter 7).

Table 1. Overview of calculations using the reconstructed process

In the table the described steps are expressed as person-hours (ph).

Mycenae

Section 3

Scenario	Step 1	2	3	4	5	Total per face	Ratio face/fill	Costs continued fill	Total 2xface and continued fill	Cost rubble fill at 0.159m3 /ph	Total 2x face and rubble fill
I	31.6	48.7	205.9	11.2	22.3	**319.7**	4.6	1,462.1	**2,101.5**	5,655.8	**6,295.2**
II	40.2	61.9	261.8	14.1	28.3	**406.3**	3.4	1,387.8	**2,200.4**	5,147.2	**5,959.8**
III	40.3			14.2	28.6	**83.1**	3.4	283.8	**450.0**	5,147.2	**5,313.4**
IV	40.2	68.5	136.3	14.2	28.3	**287.5**	3.5	1,003.8	**1,578.8**	5,147.0	**5,722.0**
V	35.1	48.7	201.3	12.4	24.8	**322.3**	4.2	1,338.7	**1,983.3**	5,446.4	**6,091.0**
VI	20.7	48.3	83.3	7.3	14.6	**174.2**	8.6	1,493.1	**1,841.5**	6,303.2	**6,651.6**
VII	33.4	48.3	111.5	11.7	23.5	**228.4**	4.7	1,076.0	**1,532.8**	5,554.0	**6,010.8**
VIII	24.1	48.3	75.3	8.5	17.0	**173.2**	7.2	1,250.8	**1,597.2**	6,103.6	**6,450.0**
one size	40.1	75.6	150.4	14.3	28.6	**309.0**	3.4	1,055.3	**1,673.3**	5,147.2	**5,765.2**

Section 4

Scenario	Step 1	2	3	for 3 courses	4	per course	5	per course	Total per face	Ratio face/fill	Costs continued fill	Total 2xface and	Cost rubble fill at 0.159m3	Total 2x face and

												continued fill	/ph	rubble fill
I	5.0	11.5	19.8	9.9	9.6	1.6	19.3	3.2	**34.4**	6.2	214.1	**283.0**	1,153.8	**1,222.7**
II	5.3	11.5	19.8	9.9	10.3	1.7	20.7	3.5	**35.3**	5.7	199.8	**270.4**	1,132.2	**1,202.8**
III	12.2			0.0		0.0		0.0	**12.2**	5.7	69.1	**93.5**	1,132.2	**1,156.6**
IV	9.8	29.8	39.4	19.7	18.5	3.1	37.1	6.2	**74.7**	2.1	160.4	**309.9**	866.5	**1,016.0**
V	9.2	16.4	29.7	14.9	16.0	2.7	32.1	5.4	**53.8**	2.4	130.5	**238.1**	903.7	**1,011.3**
VI	4.2	9.0	17.2	8.6	7.3	1.2	14.7	2.5	**27.9**	7.8	217.1	**272.9**	1,200.1	**1,255.9**
VII	8.7	18.7	26.1	13.1	16.4	2.7	32.9	5.5	**54.1**	2.7	146.1	**254.3**	934.3	**1,042.5**
VIII	5.1	12.1	17.3	8.7	7.6	1.3	15.1	2.5	**32.2**	6.0	194.6	**258.9**	1,147.8	**1,212.1**
one size	5.3	10.0	19.8	9.9	10.0	1.7	20.1	3.4	**33.6**	5.7	189.9	**257.0**	886.8	**953.9**

Teichos
Dymaion
Section 1

Scenario	Step 1	2	3	per course	4	per course	5	per course	Total per face	Ratio face/fill	Costs continued fill	Total 2xface and continued fill	Cost rubble fill at 0.159m3/ph	Total 2x face and rubble fill
I	43.5	70.4	78.2	7.8	124.5	12.5	249.0	24.9	**318.0**	1.0	308.3	**944.3**	1,240.5	**1,876.6**
II	30.3	55.3	78.0	7.8	86.6	8.7	173.2	17.3	**244.1**	2.3	553.5	**1041.7**	2,019.1	**2,507.4**
III	30.3			0.0	84.7	8.5	169.5	17.0	**132.0**	2.3	299.2	**563.2**	2,019.1	**2,283.1**
IV	51.7	85.7	119.7	12.0	146.1	14.6	292.3	29.2	**396.6**	0.6	229.1	**1022.2**	851.8	**1,644.9**
V	48.7	85.7	119.7	12.0	137.5	13.8	274.9	27.5	**383.2**	0.7	250.9	**1017.2**	937.4	**1,703.7**
VI	15.3	49.3	96.5	9.7	43.9	4.4	87.9	8.8	**184.9**	6.5	1192.6	**1562.3**	2,900.9	**3,270.6**
VII	32.0	70.0	97.1	9.7	89.8	9.0	179.6	18.0	**277.7**	2.0	566.3	**1121.8**	1,918.5	**2,474.0**
VIII	21.0	53.2	97.1	9.7	59.3	5.9	118.5	11.9	**213.3**	4.9	1049.7	**1476.3**	2,702.1	**3,128.7**
one size	30.0	56.6	112.5	11.3	85.5	8.6	171.0	17.1	**268.0**	2.3	607.5	**1143.4**	2,019.1	**2,555.0**

Section 2

Scenario	Step 1	2	3	per course	4	per course	5	per course	Total per face	Ratio face/fill	Costs continued fill	Total 2xface and continued fill	Cost rubble fill at 0.159m3/ph	Total 2x face and rubble fill
I	41.8	82.6	160.6	40.2	121.9	30.5	243.9	61.0	**296.2**	0.4	109.6	**701.9**	455.0	**1,047.3**
II	17.1	36.8	96.4	24.1	54.1	13.5	108.1	27.0	**142.7**	3.8	541.9	**827.2**	1,909.1	**2,194.4**
III	17.1			0.0	47.8	12.0	95.6	23.9	**53.0**	3.8	201.2	**307.1**	1,909.1	**2,015.0**
IV	46.8	82.7	160.6	40.2	137.4	34.4	274.9	68.7	**312.9**	0.1	36.2	**662.0**	159.4	**785.2**
V	46.4	81.7	160.5	40.1	135.5	33.9	271.0	67.8	**310.0**	0.1	42.5	**662.5**	187.1	**807.1**
VI	14.2	31.2	85.3	21.3	44.7	11.2	89.5	22.4	**121.6**	5.0	604.1	**847.3**	2,077.7	**2,320.9**
VII	21.6	41.0	88.7	22.2	62.1	15.5	124.2	31.1	**153.5**	2.6	398.7	**705.7**	1,646.2	**1,953.3**
VIII	14.6	33.0	85.4	21.4	42.4	10.6	84.7	21.2	**122.1**	4.8	586.4	**830.6**	2,057.5	**2,301.7**
one size	16.9	31.9	63.5	15.9	48.3	12.1	96.5	24.1	**116.8**	3.8	443.5	**677.0**	1,909.1	**2,142.6**

Section 3

Scenario	Step 1	2	3	per course	4	per course	5	per course	Total per face	Ratio face/fill	Costs continued fill	Total 2xface and continued fill	Cost rubble fill at 0.159m3/ph	Total 2x face and rubble fill
I	48.7	82.0	195.7	39.1	138.8	27.8	277.6	55.5	**331.4**	0.0	0.1	**662.9**	0.4	**663.2**
II	21.0	25.2	69.8	14.0	63.1	12.6	126.1	25.2	**125.9**	2.6	333.6	**585.5**	1,633.1	**1,885.0**
III	21.0			0.0		0.0		0.0	**21.0**	2.6	55.6	**97.6**	1,633.1	**1,675.1**
IV	73.1	134.8	300.2	60.0	205.6	41.1	411.2	82.2	**511.4**	-0.7	-340.6	**682.1**	-1,431.0	**-408.2**
V	70.9	134.6	300.2	60.0	200.5	40.1	401.1	80.2	**505.9**	-0.6	-316.0	**695.9**	-1,301.4	**-289.6**
VI	16.2	24.4	77.5	15.5	47.0	9.4	93.9	18.8	**115.3**	4.0	463.4	**693.9**	1,913.6	**2,144.2**
VII	39.1	90.3	311.9	62.4	112.5	22.5	225.1	45.0	**384.1**	0.5	189.2	**957.4**	566.5	**1,334.6**
VIII	24.8	44.2	95.9	19.2	73.0	14.6	146.1	29.2	**170.4**	1.9	330.2	**670.9**	1,410.5	**1,751.2**
one size	20.7	39.2	77.9	15.6	59.2	11.8	118.3	23.7	**142.1**	2.6	376.6	**660.9**	1,633.1	**1,917.4**

Section 4

Scenario	Step 1	2	3	per course	4	per course	5	per course	Total per face	Ratio face/fill	Costs continued fill	Total 2xface and continued fill	Cost rubble fill at 0.159m3/ph	Total 2x face and rubble fill
I	17.9	44.8	80.1	16.0	52.8	10.6	105.6	21.1	**252.8**	0.2	43.9	**549.5**	91.4	**597.0**
II	7.2	16.7	32.4	6.5	23.0	4.6	46.0	9.2	**106.7**	3.4	362.7	**576.1**	720.4	**933.8**
III	7.2			0.0		0.0		0.0	**7.2**	3.4	24.5	**38.9**	720.4	**734.8**
IV	19.5	44.9	72.9	14.6	56.2	11.2	112.5	22.5	**266.7**	0.0	-0.2	**533.3**	-0.4	**533.1**
V	19.2	37.1	72.9	14.6	55.4	11.1	110.7	22.1	**255.7**	0.0	7.2	**518.7**	16.0	**527.4**
VI	5.8	14.4	27.4	5.5	18.0	3.6	36.1	7.2	**85.0**	4.6	388.4	**558.4**	795.8	**965.9**
VII	17.0	60.8	53.8	10.8	48.5	9.7	97.1	19.4	**252.4**	1.5	380.0	**884.9**	491.4	**996.3**
VIII	10.6	26.4	46.1	9.2	31.8	6.4	63.7	12.7	**151.5**	3.7	566.5	**869.5**	745.5	**1,048.5**
one size	7.1	13.5	31.3	6.3	20.4	4.1	40.7	8.1	**94.0**	3.4	319.6	**507.6**	720.4	**908.4**

Table 2. Overview of calculations using Mayes and Murakami assembly rates

Mycenae

Section 3

Scenario	Volume (m3)	# blocks	max. tot. vol.	Labour rate	Costs (ph)	Ratio of vol. / tot. vol.	Vol. fill (with spaces)	Costs fill (ph)	Total (2xface+fill)	Fill build rate 0.4625	Fill build rate 0.0.8375
I	up to 0,2	111	0.5	0.034	14.4	0.003	2.5	72.4			
	up to 0,5	56	24.3	0.024	1,013.7	0.163	122.0	5,082.8			
	over 0,5	55	124.0	0.019	6,528.5	0.833	622.0	32,734.3		1,944.4	1,073.8
	Subtotal		**148.9**		**7,556.7**	**1.000**		**37,889.4**	**53,002.8**	**17,057.7**	**16,187.1**
II	up to 0,2	111	0.6	0.034	18.4	0.003	2.2	65.9			
	up to 0,5	56	30.9	0.024	1,289.1	0.163	111.0	4,625.7			
	over 0,5	55	157.7	0.019	8,302.0	0.833	566.0	29,790.3		1,769.5	977.2
	Subtotal		**189.3**		**9,609.4**	**1.000**		**34,481.9**	**53,700.7**	**20,988.4**	**20,196.1**

III	up to 0,2	111	9.9	0.034	289.9	0.052	35.4	1,040.3			
	up to 0,5	56	41.7	0.024	1,738.5	0.220	149.7	6,238.2			
	over 0,5	55	137.7	0.019	7,248.4	0.728	494.2	26,009.8		1,769.5	977.2
	Subtotal		**189.3**		**9,276.8**	**1.000**		**33,288.3**	**51,841.9**	**20,323.1**	**19,530.8**
IV	up to 0,2	111	2.8	0.034	81.8	0.015	10.0	293.4			
	up to 0,5	56	44.8	0.024	1,867.6	0.237	160.8	6,700.8			
	over 0,5	55	141.7	0.019	7,458.4	0.749	508.5	26,760.8		1,769.5	977.2
	Subtotal		**189.3**		**9,407.7**	**1.000**		**33,755.1**	**52,570.6**	**20,585.0**	**19,792.7**
V	up to 0,2	111	1.4	0.034	40.9	0.008	6.0	177.6			
	up to 0,5	56	22.4	0.024	933.8	0.135	97.3	4,055.1			
	over 0,5	55	141.7	0.019	7,458.4	0.856	615.4	32,389.5		1,872.4	1,034.0
	Subtotal		**165.5**		**8,433.1**	**1.000**		**36,622.3**	**53,488.4**	**18,738.5**	**17,900.2**
VI	up to 0,2	146	4.6	0.034	133.9	0.047	38.9	1,144.0			
	up to 0,5	49	31.9	0.024	1,331.0	0.328	272.8	11,368.5			
	over 0,5	27	60.9	0.019	3,204.9	0.625	520.1	27,373.7		2,167.0	1,196.7
	Subtotal		**97.4**		**4,669.9**	**1.000**		**39,886.2**	**49,225.9**	**11,506.7**	**10,536.4**
VII	up to 0,2	126	15.3	0.034	449.9	0.097	71.4	2,101.1			
	up to 0,5	20	72.1	0.024	3,003.9	0.459	336.7	14,027.5			
	over 0,5	76	69.6	0.019	3,661.4	0.443	324.9	17,098.0		1,909.4	1,054.4
	Subtotal		**157.0**		**7,115.2**	**1.000**		**33,226.6**	**47,457.1**	**16,139.8**	**15,284.8**
VIII	up to 0,2	146	7.6	0.034	225.0	0.068	54.4	1,599.9			
	up to 0,5	49	36.0	0.024	1,501.9	0.318	256.4	10,681.5			
	over 0,5	27	69.6	0.019	3,661.4	0.614	494.7	26,039.1		2,098.3	1,158.8
	Subtotal		**113.3**		**5,388.3**	**1.000**		**38,320.5**	**49,097.1**	**12,874.9**	**11,935.4**

Section 4

Scenario	Volume (m3)	# blocks	max. tot. vol.	Labour rate	Costs (ph)	Ratio of vol. / tot. vol.	Vol. fill (with spaces)	Costs fill (ph)	Total (2xface+fill)	Fill build rate 0.4625	Fill build rate 0.0.8375
I	up to 0,2	127	2.8	0.034	82.9	0.122	18.5	544.4			
	up to 0,5	42	20.4	0.024	848.6	0.878	133.8	5,573.3			

	over 0,5			0.019	0.0	0.000	0.0	0.0		396.7	219.1
	Subtotal		**23.2**		**931.5**	**1.000**		**6,117.7**	**7,980.6**	**2,259.6**	**2,082.0**
II	up to 0,2	127	3.0	0.034	89.0	0.122	18.2	534.2			
	up to 0,5	42	21.9	0.024	911.4	0.878	131.3	5,469.0			
	over 0,5			0.019	0.0	0.000	0.0	0.0		389.2	215.0
	Subtotal		**24.9**		**1,000.4**	**1.000**		**6,003.3**	**8,004.1**	**2,390.1**	**2,215.8**
III	up to 0,2	85	0.9	0.034	25.4	0.035	5.2	152.7			
	up to 0,5	42	2.9	0.024	119.7	0.115	17.2	718.2			
	over 0,5	42	21.2	0.019	1,113.8	0.850	127.0	6,683.9		389.2	215.0
	Subtotal		**24.9**		**1,258.9**	**1.000**		**7,554.7**	**10,072.6**	**2,907.1**	**2,732.8**
IV	up to 0,2	127	5.9	0.034	173.9	0.128	14.7	432.1			
	up to 0,5			0.024	0.0	0.000	0.0	0.0			
	over 0,5	42	40.1	0.019	2,111.1	0.872	99.7	5,245.3		297.9	164.5
	Subtotal		**46.0**		**2,285.1**	**1.000**		**5,677.4**	**10,247.6**	**4,868.0**	**4,734.7**
V	up to 0,2	127	3.0	0.034	87.0	0.069	8.2	240.8			
	up to 0,5	56		0.024	0.0	0.000	0.0	0.0			
	over 0,5	42	40.1	0.019	2,111.1	0.931	111.1	5,846.0		310.7	171.6
	Subtotal		**43.1**		**2,198.1**	**1.000**		**6,086.8**	**10,483.0**	**4,706.9**	**4,567.8**
VI	up to 0,2	147	5.5	0.034	162.7	0.284	44.9	1,320.7			
	up to 0,5	15	7.2	0.024	299.5	0.368	58.4	2,431.4			
	over 0,5	7	6.8	0.019	357.3	0.348	55.1	2,901.0		412.6	227.8
	Subtotal		**19.5**		**819.4**	**1.000**		**6,653.1**	**8,291.8**	**2,051.4**	**1,866.6**
VII	up to 0,2	125	10.2	0.034	301.0	0.252	31.0	913.2			
	up to 0,5	22	9.8	0.024	408.9	0.242	29.8	1,240.7			
	over 0,5	22	20.6	0.019	1,083.7	0.507	62.5	3,287.9		321.2	177.4
	Subtotal		**40.6**		**1,793.6**	**1.000**		**5,441.8**	**9,029.0**	**3,908.3**	**3,764.5**
VIII	up to 0,2	147	10.0	0.034	294.8	0.424	64.2	1,887.4			
	up to 0,5	15	7.0	0.024	289.7	0.294	44.5	1,854.5			
	over 0,5	7	6.7	0.019	351.8	0.283	42.8	2,252.5		394.6	217.9
	Subtotal		**23.7**		**936.3**	**1.000**		**5,994.4**	**7,867.1**	**2,267.3**	**2,090.6**

Teichos Dymaion

Section 1

Scenario	Volume (m3)	# blocks	max. tot. vol.	Labour rate	Costs (ph)	Ratio of vol. / tot. vol.	Vol. fill (with spaces)	Costs fill (ph)	Total (2xface+fill)	Fill build rate 0.4625	Fill build rate 0.0.8375
I	up to 0,2	257	16.0	0.034	471.7	0.079	21.0	617.3			
	up to 0,5			0.024	0.0	0.000	0.0	0.0			
	over 0,5	85	187.5	0.019	9,868.4	0.921	245.4	12,914.6		693.9	383.2
	Subtotal		**203.5**		**10,340.1**	**1.000**		**13,531.9**	**34,212.2**	**21,374.1**	**21,063.4**
II	up to 0,2	257	11.2	0.034	328.2	0.079	29.1	855.6			
	up to 0,5	42		0.024	0.0	0.000	0.0	0.0			
	over 0,5	85	130.4	0.019	6,865.4	0.921	340.1	17,899.6		961.7	531.1
	Subtotal		**141.6**		**7,193.5**	**1.000**		**18,755.2**	**33,142.3**	**15,348.8**	**14,918.2**
III	up to 0,2	172	7.5	0.034	219.1	0.053	19.4	571.4			
	up to 0,5	85	34.0	0.024	1,416.0	0.240	88.6	3,691.8			
	over 0,5	85	100.2	0.019	5,271.9	0.707	261.2	13,745.0		961.7	531.1
	Subtotal		**141.6**		**6,907.0**	**1.000**		**18,008.2**	**31,822.2**	**14,775.7**	**14,345.1**
IV	up to 0,2	172	3.4	0.034	100.5	0.014	2.8	82.6			
	up to 0,5	85	28.2	0.024	1,173.4	0.116	23.2	964.9			
	over 0,5	85	211.8	0.019	11,149.7	0.870	174.2	9,168.2		521.4	287.9
	Subtotal		**243.4**		**12,423.6**	**1.000**		**10,215.6**	**35,062.8**	**25,368.6**	**25,135.1**
V	up to 0,2	257	15.8	0.034	464.4	0.069	15.7	461.8			
	up to 0,5			0.024	0.0	0.000	0.0	0.0			
	over 0,5	85	211.8	0.019	11,149.7	0.931	210.7	11,087.8		589.7	325.7
	Subtotal		**227.6**		**11,614.1**	**1.000**		**11,549.6**	**34,777.8**	**23,817.9**	**23,553.8**
VI	up to 0,2	273	15.6	0.034	459.7	0.218	106.1	3,120.0			
	up to 0,5	59	33.8	0.024	1,410.0	0.473	229.7	9,570.6			
	over 0,5	10	22.1	0.019	1,161.0	0.308	149.7	7,880.4		1,264.7	698.4
	Subtotal		**71.5**		**3,030.6**	**1.000**		**20,571.1**	**26,632.4**	**7,326.0**	**6,759.7**

VII	up to 0,2	205	21.9	0.034	644.3	0.146	52.1	1,533.0			
	up to 0,5	68	31.1	0.024	1,296.8	0.208	74.1	3,085.6			
	over 0,5	69	96.6	0.019	5,081.9	0.645	229.8	12,092.2		927.2	512.0
	Subtotal		**149.6**		**7,022.9**	**1.000**		**16,710.9**	**30,756.8**	**14,973.1**	**14,557.9**
VIII	up to 0,2	273	26.5	0.034	779.8	0.304	139.6	4,105.9			
	up to 0,5	59	35.8	0.024	1,492.4	0.410	188.6	7,857.4			
	over 0,5	10	24.9	0.019	1,311.7	0.286	131.2	6,906.4		1,196.7	660.9
	Subtotal		**87.3**		**3,583.9**	**1.000**		**18,869.7**	**26,037.5**	**8,364.6**	**7,828.7**

Section 2

Scenario	Volume (m3)	# blocks	max. tot. vol.	Labour rate	Costs (ph)	Ratio of vol. / tot. vol.	Vol. fill (with spaces)	Costs fill (ph)	Total (2xface+fill)	Fill build rate 0.4625	Fill build rate 0.0.8375
I	up to 0,2	457	4.2	0.034	123.3	0.021	3.0	87.6			
	up to 0,5			0.024	0.0	0.000	0.0	0.0			
	over 0,5	152	191.3	0.019	10,067.2	0.979	135.9	7,152.3		361.8	199.8
	Subtotal		**195.5**		**10,190.5**	**1.000**		**7,239.8**	**27,620.8**	**20,742.7**	**20,580.7**
II	up to 0,2	457	1.7	0.034	50.4	0.021	7.1	208.6			
	up to 0,5	152	78.2	0.024	3,257.0	0.979	323.7	13,485.6			
	over 0,5			0.019	0.0	0.000	0.0	0.0		861.6	475.8
	Subtotal		**79.9**		**3,307.3**	**1.000**		**13,694.2**	**20,308.9**	**7,476.3**	**7,090.5**
III	up to 0,2	305	3.6	0.034	107.3	0.046	15.1	444.1			
	up to 0,5	152	7.3	0.024	305.3	0.092	30.3	1,263.9			
	over 0,5	152	68.9	0.019	3,626.7	0.863	285.3	15,016.5		861.6	475.8
	Subtotal		**79.9**		**4,039.2**	**1.000**		**16,724.5**	**24,802.9**	**8,940.0**	**8,554.2**
IV	up to 0,2	457	4.4	0.034	130.4	0.020	2.0	59.4			
	up to 0,5			0.024	0.0	0.000	0.0	0.0			
	over 0,5	152	214.6	0.019	11,293.3	0.980	97.8	5,146.0		260.0	143.6
	Subtotal		**219.0**		**11,423.7**	**1.000**		**5,205.5**	**28,052.9**	**23,107.4**	**22,991.0**
V	up to 0,2	457	2.2	0.034	65.2	0.010	1.1	31.1			
	up to 0,5			0.024	0.0	0.000	0.0	0.0			

	over 0,5	152	214.6	0.019	11,293.3	0.990	102.4	5,390.4		269.6	148.9
	Subtotal		**216.8**		**11,358.5**	**1.000**		**5,421.6**	**28,138.5**	**22,986.5**	**22,865.8**
VI	up to 0,2	540	9.9	0.034	290.5	0.149	52.4	1,542.5			
	up to 0,5	44	18.8	0.024	785.2	0.284	100.1	4,169.9			
	over 0,5	25	37.8	0.019	1,987.0	0.568	200.5	10,551.3		919.6	507.8
	Subtotal		**66.5**		**3,062.7**	**1.000**		**16,263.8**	**22,389.2**	**7,044.9**	**6,633.2**
VII	up to 0,2	540	31.0	0.034	913.1	0.308	91.2	2,681.1			
	up to 0,5			0.024	0.0	0.000	0.0	0.0			
	over 0,5	69	69.8	0.019	3,671.9	0.692	204.8	10,781.1		771.1	425.8
	Subtotal		**100.8**		**4,585.0**	**1.000**		**13,462.2**	**22,632.3**	**9,941.1**	**9,595.9**
VIII	up to 0,2	540	15.5	0.034	456.6	0.228	79.9	2,350.8			
	up to 0,5	44	17.2	0.024	718.2	0.253	88.7	3,697.9			
	over 0,5	25	35.3	0.019	1,857.4	0.519	181.7	9,563.5		912.7	504.1
	Subtotal		**68.1**		**3,032.2**	**1.000**		**15,612.1**	**21,676.6**	**6,977.2**	**6,568.5**

Section 3

Scenario	Volume (m3)	# blocks	max. tot. vol.	Labour rate	Costs (ph)	Ratio of vol. / tot. vol.	Vol. fill (with spaces)	Costs fill (ph)	Total (2xface+fill)	Fill build rate 0.4625	Fill build rate 0.0.8375
I	up to 0,2	300	10.8	0.034	318.5	0.048	3.7	108.5			
	up to 0,5			0.024	0.0	0.000	0.0	0.0			
	over 0,5	99	216.9	0.019	11,417.2	0.952	73.9	3,889.9		202.1	111.6
	Subtotal		**227.8**		**11,735.7**	**1.000**		**3,998.4**	**27,469.8**	**23,673.5**	**23,582.9**
II	up to 0,2	300	4.7	0.034	137.1	0.048	13.9	409.6			
	up to 0,5			0.024	0.0	0.000	0.0	0.0			
	over 0,5	99	93.4	0.019	4,914.7	0.952	279.0	14,684.1		763.1	421.4
	Subtotal		**98.0**		**5,051.8**	**1.000**		**15,093.7**	**25,197.2**	**10,866.6**	**10,525.0**
III	up to 0,2	200	3.4	0.034	101.0	0.035	10.3	301.6			
	up to 0,5	100	13.0	0.024	543.7	0.133	39.0	1,624.5			
	over 0,5	99	81.6	0.019	4,292.6	0.832	243.7	12,825.3		763.1	421.4
	Subtotal		**98.0**		**4,937.2**	**1.000**		**14,751.4**	**24,625.8**	**10,637.5**	**10,295.8**

IV	up to 0,2	300	20.5	0.034	602.1	0.060	-6.7	-196.3			
	up to 0,5			0.024	0.0	0.000	0.0	0.0			
	over 0,5	99	321.1	0.019	16,900.5	0.940	-104.7	-5,509.5		-290.1	-160.2
	Subtotal		**341.6**		**17,502.6**	**1.000**		**-5,705.8**	**29,299.4**	**34,715.1**	**34,845.0**
V	up to 0,2	300	10.2	0.034	301.1	0.031	-2.9	-85.7			
	up to 0,5			0.024	0.0	0.000	0.0	0.0			
	over 0,5	99	321.1	0.019	16,900.5	0.969	-91.4	-4,813.0		-245.8	-135.7
	Subtotal		**331.3**		**17,201.5**	**1.000**		**-4,898.7**	**29,504.3**	**34,157.2**	**34,267.3**
VI	up to 0,2	352	19.9	0.034	586.2	0.263	86.9	2,554.6			
	up to 0,5			0.024	0.0	0.000	0.0	0.0			
	over 0,5	47	55.8	0.019	2,936.1	0.737	243.1	12,796.1		859.6	474.7
	Subtotal		**75.7**		**3,522.3**	**1.000**		**15,350.6**	**22,395.2**	**7,904.2**	**7,519.3**
VII	up to 0,2	288	37.8	0.034	1,112.6	0.207	31.5	926.9			
	up to 0,5	64	42.1	0.024	1,753.1	0.230	35.1	1,460.6			
	over 0,5	47	102.9	0.019	5,414.0	0.563	85.7	4,510.5		396.7	219.1
	Subtotal		**182.8**		**8,279.8**	**1.000**		**6,898.0**	**23,457.6**	**16,956.3**	**16,778.7**
VIII	up to 0,2	288	18.9	0.034	556.3	0.163	43.1	1,267.3			
	up to 0,5	64	21.0	0.024	876.6	0.182	47.9	1,996.8			
	over 0,5	47	75.8	0.019	3,987.4	0.655	172.6	9,083.0		686.7	379.2
	Subtotal		**115.7**		**5,420.2**	**1.000**		**12,347.1**	**23,187.6**	**11,527.1**	**11,219.7**

Section 4

Scenario	Volume (m3)	# blocks	max. tot. vol.	Labour rate	Costs (ph)	Ratio of vol. / tot. vol.	Vol. fill (with spaces)	Costs fill (ph)	Total (2xface+fill)	Fill build rate 0.4625	Fill build rate 0.0.8375
I	up to 0,2	208	2.3	0.034	67.3	0.027	1.2	34.6			
	up to 0,5			0.024	0.0	0.000	0.0	0.0			
	over 0,5	69	81.4	0.019	4,285.2	0.973	41.8	2,200.2		112.0	61.8
	Subtotal		**83.7**		**4,352.6**	**1.000**		**2,234.8**	**10,939.9**	**8,817.1**	**8,767.0**
II	up to 0,2	208	0.9	0.034	27.1	0.027	3.4	101.3			
	up to 0,5	69	32.8	0.024	1,365.8	0.973	122.5	5,106.2			

	over 0,5			0.019	0.0	0.000	0.0	0.0		328.2	181.3
	Subtotal		**33.7**		**1,392.9**	**1.000**		**5,207.5**	**7,993.3**	**3,114.0**	**2,967.0**
III	up to 0,2	139	1.3	0.034	38.7	0.039	4.9	144.6			
	up to 0,5	69	3.0	0.024	125.9	0.090	11.3	470.6			
	over 0,5	69	29.4	0.019	1,545.5	0.871	109.8	5,778.1		328.2	181.3
	Subtotal		**33.7**		**1,710.0**	**1.000**		**6,393.3**	**9,813.3**	**3,748.3**	**3,601.3**
IV	up to 0,2	208	2.5	0.034	74.8	0.028	0.9	25.4			
	up to 0,5			0.024	0.0	0.000	0.0	0.0			
	over 0,5	69	88.4	0.019	4,654.9	0.972	30.0	1,580.8		80.5	44.4
	Subtotal		**91.0**		**4,729.7**	**1.000**		**1,606.2**	**11,065.6**	**9,539.9**	**9,503.9**
V	up to 0,2	208	1.3	0.034	37.4	0.014	0.5	13.8			
	up to 0,5			0.024	0.0	0.000	0.0	0.0			
	over 0,5	69	88.4	0.019	4,654.9	0.986	32.5	1,712.7		86.0	47.5
	Subtotal		**89.7**		**4,692.3**	**1.000**		**1,726.4**	**11,111.1**	**9,470.6**	**9,432.1**
VI	up to 0,2	241	5.1	0.034	151.0	0.190	26.0	763.6			
	up to 0,5	27	11.3	0.024	472.3	0.418	57.3	2,387.9			
	over 0,5	9	10.6	0.019	558.9	0.392	53.7	2,825.9		356.8	197.0
	Subtotal		**27.1**		**1,182.3**	**1.000**		**5,977.4**	**8,342.0**	**2,721.4**	**2,561.6**
VII	up to 0,2	241	19.9	0.034	583.9	0.382	36.6	1,076.9			
	up to 0,5			0.024	0.0	0.000	0.0	0.0			
	over 0,5	36	32.1	0.019	1,687.7	0.618	59.1	3,112.5		249.4	137.7
	Subtotal		**51.9**		**2,271.6**	**1.000**		**4,189.4**	**8,732.5**	**4,792.6**	**4,680.9**
VIII	up to 0,2	241	9.9	0.034	291.9	0.313	40.4	1,189.5			
	up to 0,5	27	10.3	0.024	427.7	0.324	41.8	1,742.6			
	over 0,5	9	11.5	0.019	607.2	0.364	47.0	2,473.8		336.7	186.0
	Subtotal		**31.7**		**1,326.8**	**1.000**		**5,406.0**	**8,059.6**	**2,990.4**	**2,839.6**

Appendix 6 Overview of the calculations of the total costs

This appendix consists of two tables. Table 1 provides an overview of the costs per process per section and scenario for the fortifications. In table 2, the costs per process and scenario for the domestic structures are presented. All labour costs are expressed in person-hours (ph).

Table 1. Overview of the calculations for the total costs of the fortifications

Mycenae

		min	max
Section 1	Acquisition	5,813	9,300
	Transport	1,212	1,530
	Loading/unloading	62	821
	Levelling	88	114
	Dressing	12,976	15,352
	Ramp	971	1,208
	Assembly	1,531	7,484
	Total	**22,652**	**35,809**
Section 2	Acquisition	1,181	1,890
	Transport	297	297
	Loading/unloading	16	284
	Levelling	68	87
	Dressing	1,870	2,943
	Ramp	971	1,208
	Assembly	327	1,216
	Total	**4,729**	**7,925**

Section 3

Scenario		Acquisition	Transport	(Un)loading	Levelling	Ramp	Assembly	**Total**
I	min	4,698.5	736.5	157.8	420.0	970.7	2,101.5	**9,085.0**
	max	17,429.8	961.0	2,424.1	543.1	1,207.7	53,002.8	**75,568.5**
II	min	5,436.5	780.0	162.5	420.0	970.7	2,200.4	**9,970.1**
	max	17,429.8	953.4	2,307.1	543.1	1,207.7	53,700.7	**76,141.8**
III	min	5,436.5	795.7		420.0	970.7		**7,622.9**
	max	17,429.8	996.0	2,697.0	543.1	1,207.7	54,841.0	**77,714.6**
IV	min	5,436.6	814.7	164.8	420.0	970.7	1,578.8	**9,385.6**
	max	17,429.8	1,042.0	2,570.1	543.1	1,207.7	52,570.6	**75,363.3**
V	min	5,002.8	785.3	258.5	420.0	970.7	1,983.3	**9,420.6**
	max	17,429.8	1,036.3	2,436.9	543.1	1,207.7	53,488.4	**76,142.2**
VI	min	3,761.8	716.4	317.1	420.0	970.7	1,841.5	**8,027.5**
	max	17,429.8	1,023.8	2,854.2	543.1	1,207.7	49,255.9	**72,314.5**
VII	min	4,847.9	778.2	322.1	420.0	970.7	1,532.8	**8,871.7**
	max	17,429.8	1,018.0	2,979.6	543.1	1,207.7	47,457.1	**70,635.3**
VIII	min	4,051.6	739.1	341.2	420.0	970.7	1,597.2	**8,119.8**
	max	17,429.8	1,036.5	2,877.1	543.1	1,207.7	49,097.1	**72,191.3**

one size	min	5,436.5	768.2	160.0	420.0	970.7	1,673.3	**9,428.7**
	max	17,429.8	921.4	2,980.8	543.1	1,207.7	52,290.0	**75,372.8**

Section 4

Scenario		Acquisition	Transport	(Un)loading	Levelling	Ramp	Assembly	**Total**
I	min	804.3	93.9	32.9	222.5	970.7	283.0	**2,407.3**
	max	3,346.5	120.0	953.8	287.7	1,207.7	7,980.6	**13,896.3**
II	min	835.2	94.8	30.6	222.5	970.7	270.4	**2,424.2**
	max	3,346.5	119.9	888.6	287.7	1,207.7	8,004.1	**13,854.5**
III	min	835.2	94.8		222.5	970.7		**2,123.2**
	max	3,346.5	119.9	551.6	287.7	1,207.7	10,072.6	**15,586.0**
IV	min	1,219.7	106.5	33.2	222.5	970.7	310.0	**2,862.6**
	max	3,346.5	120.0	945.5	287.7	1,207.7	10,247.6	**16,155.0**
V	min	1,166.9	104.8	31.0	222.5	970.7	238.1	**2,734.0**
	max	3,346.5	119.9	513.4	287.7	1,207.7	10,483.0	**15,958.2**
VI	min	736.8	91.8	29.3	222.5	970.7	272.9	**2,324.0**
	max	3,346.5	119.8	1,173.8	287.7	1,207.7	8,291.8	**14,427.3**
VII	min	1,121.3	103.5	32.9	222.5	970.7	254.3	**2,705.2**
	max	3,346.5	120.0	587.3	287.7	1,207.7	8,029.0	**13,578.2**
VIII	min	813.4	94.1	32.2	222.5	970.7	258.9	**2,391.8**
	max	3,346.5	119.9	990.0	287.7	1,207.7	7,867.1	**13,818.9**
one size	min	835.2	94.8	30.7	222.5	970.7	257.0	**2,410.9**
	max	3,346.5	119.9	572.4	287.7	1,207.7	10,039.5	**15,573.7**

Teichos Dymaion

Section 1

Scenario		Acquisition	Transport	(Un)loading	Levelling	Ramp	Assembly	**Total**
I	min	4,916.7	161.9	98.9	381.9	970.7	944.3	**7,474.4**
	max	10,600.7	181.1	1,817.2	493.8	1,207.7	34,212.2	**48,512.7**
II	min	3,788.7	149.8	99.0	381.9	970.7	1,041.7	**6,431.8**
	max	10,600.7	181.1	2,126.4	493.8	1,207.7	33,142.3	**47,752.0**
III	min	3,788.7	149.8		381.9	970.7	418.6	**5,709.7**
	max	10,600.7	181.1		493.8	1,207.7	31,822.2	**44,305.5**
IV	min	5,479.8	182.2	101.8	381.9	970.7	1,022.2	**8,138.6**
	max	10,600.7	199.5	1,987.2	493.8	1,207.7	35,062.8	**49,551.7**
V	min	5,355.9	175.5	97.7	381.9	970.7	1,017.2	**7,998.9**
	max	10,600.7	192.9	1,937.5	493.8	1,207.7	34,777.8	**49,210.4**
VI	min	2,511.4	136.2	100.6	381.9	970.7	1,562.3	**5,663.1**
	max	10,600.7	181.3	2,846.3	493.8	1,207.7	26,632.4	**41,962.2**
VII	min	3,934.5	152.4	96.9	381.9	970.7	1,121.8	**6,658.2**
	max	10,600.7	183.2	3,017.2	493.8	1,207.7	30,756.8	**46,259.4**
VIII	min	2,799.3	140.2	103.1	381.9	970.7	1,476.3	**5,871.5**
	max	10,600.7	184.5	2,267.5	493.8	1,207.7	26,037.5	**40,791.7**
one size	min	3,788.7	149.8	107.8	381.9	970.7	1,143.4	**6,542.3**

	max	10,600.7	181.1	1,952.4	493.8	1,207.7	34,248.4	**48,684.1**

Section 2

Scenario		Acquisition	Transport	(Un)loading	Levelling	Ramp	Assembly	**Total**
I	min	4,489.1	131.8	78.2	676.7	970.7	701.9	**7,048.4**
	max	8,128.9	138.8	1,469.9	875.0	1,207.7	27,620.8	**39,441.1**
II	min	2,382.7	109.3	85.8	676.7	970.7	827.2	**5,052.4**
	max	8,128.9	138.9	1,985.0	875.0	1,207.7	20,308.9	**32,644.4**
III	min	2,382.7	109.3		676.7	970.7	239.2	**4,378.6**
	max	8,128.9	138.9		875.0	1,207.7	24,802.9	**35,153.4**
IV	min	4,917.4	145.4	78.7	676.7	970.7	662.0	**7,450.9**
	max	8,128.9	148.4	1,312.6	875.0	1,207.7	28,052.9	**39,725.5**
V	min	4,877.3	144.9	78.0	676.7	970.7	662.5	**7,410.1**
	max	8,128.9	148.4	1,325.3	875.0	1,207.7	28,138.6	**39,823.9**
VI	min	2,138.5	106.6	85.7	676.7	970.7	847.3	**4,825.5**
	max	8,128.9	138.7	2,091.0	875.0	1,207.7	22,389.2	**34,830.5**
VII	min	2,763.5	114.8	80.0	676.7	970.7	705.7	**5,311.4**
	max	8,128.9	142.3	1,473.3	875.0	1,207.7	22,632.3	**34,459.5**
VIII	min	2,167.6	108.5	79.6	676.7	970.7	830.6	**4,833.7**
	max	8,128.9	143.9	2,054.1	875.0	1,207.7	21,676.6	**34,086.2**
one size	min	2,382.7	109.3	76.7	676.7	970.7	677.0	**4,893.1**
	max	8,128.9	138.9	1,390.2	875.0	1,207.7	24,388.9	**36,129.6**

Section 3

Scenario		Acquisition	Transport	(Un)loading	Levelling	Ramp	Assembly	**Total**
I	min	5,062.4	134.5	74.4	405.1	970.7	662.9	**7,310.0**
	max	7,994.2	134.5	1,433.6	523.8	1,207.7	27,469.8	**38,763.6**
II	min	2,697.1	111.3	80.0	405.1	970.7	585.5	**4,849.7**
	max	7,994.2	136.7	1,367.0	523.8	1,207.7	25,197.2	**36,426.6**
III	min	2,697.1	111.3		405.1	970.7	97.6	**4,281.8**
	max	7,994.2	136.7		523.8	1,207.7	24,625.8	**34,488.2**
IV	min	7,136.1	207.8	73.4	405.1	970.7	682.1	**9,475.2**
	max	7,994.2	138.6	1,582.6	523.8	1,207.7	29,299.4	**40,746.3**
V	min	6,948.4	201.7	73.9	405.1	970.7	695.9	**9,295.7**
	max	7,994.2	138.7	1,541.1	523.8	1,207.7	29,504.3	**40,909.8**
VI	min	2,290.8	106.6	77.0	405.1	970.7	693.9	**4,544.1**
	max	7,994.2	135.7	1,619.8	523.8	1,207.7	22,395.3	**33,876.5**
VII	min	4,242.4	128.2	74.8	405.1	970.7	957.4	**6,778.6**
	max	7,994.2	137.1	2,428.4	523.8	1,207.7	23,457.6	**35,748.8**
VIII	min	3,019.7	115.2	80.7	405.1	970.7	670.9	**5,262.3**
	max	7,994.2	137.4	1,380.0	523.8	1,207.7	23,187.6	**34,430.7**
one size	min	2,344.2	111.3	75.5	405.1	970.7	660.9	**4,567.7**
	max	7,994.2	136.7	1,366.8	523.8	1,207.7	23,982.6	**35,211.8**

Section 4

Scenario		Acquisition	Transport	(Un)loading	Levelling	Ramp	Assembly	**Total**
I	min	1,889.1	53.2	31.1	360.0	970.7	549.5	**3,853.6**

	max	3,191.9	54.6	547.8	465.5	1,207.7	10,939.9	**16,407.4**
II	min	978.0	43.4	34.0	360.0	970.7	576.1	**2,962.2**
	max	3,191.9	54.5	840.6	465.5	1,207.7	7,993.3	**13,753.5**
III	min	978.0	43.4		360.0	970.7	38.9	**2,391.0**
	max	3,191.9	54.5		465.5	1,207.7	9,813.3	**14,732.9**
IV	min	2,022.1	54.5	30.4	360.0	970.7	533.3	**3,971.0**
	max	3,191.9	54.5	564.4	465.5	1,207.7	11,065.6	**16,549.6**
V	min	1,998.4	54.3	30.2	360.0	970.7	518.7	**3,932.3**
	max	3,191.9	54.6	571.6	465.5	1,207.7	11,111.1	**16,602.4**
VI	min	868.6	41.8	32.8	360.0	970.7	558.4	**2,832.3**
	max	3,191.9	53.2	821.7	465.5	1,207.7	8,342.0	**14,082.0**
VII	min	1,309.6	46.9	48.0	360.0	970.7	884.9	**3,620.1**
	max	3,191.9	54.5	943.0	465.5	1,207.7	8,732.5	**14,595.1**
VIII	min	941.5	43.0	51.7	360.0	970.7	869.5	**3,236.4**
	max	3,191.9	54.5	1,438.9	465.5	1,207.7	8,059.6	**14,418.1**
one size	min	978.0	43.4	30.1	360.0	970.7	507.6	**2,889.8**
	max	3,191.9	54.5	546.0	**465.5**	1,207.7	9,575.6	**15,041.2**

Table 2. Overview of the calculations of the total costs of the domestic structures

Scenario	Procurement	Transport	Manufacture	Assembly	Total cost
1	456.0	1,965.0	318.5	1,053.9	**3,793.4**
2	1,073.8	4,005.9	843.6	1,965.3	**7,888.5**
3	541.8	2,463.6	17.5	1,162.3	**4,185.2**
4	256.5	1,386.6	8.8	681.5	**2,333.4**
5	874.3	3,427.5	533.8	1,664.2	**6,499.8**
6	565.5	2,441.7	416.4	1,306.6	**4,730.3**
7	669.5	2,885.8	468.3	1,545.7	**5,569.4**
8	1,576.4	5,879.1	1,239.6	2,882.4	**11,577.6**
9	796.1	3,617.1	28.0	1,704.7	**6,145.9**
10	376.9	2,037.6	14.0	999.5	**3,428.0**
11	1,283.8	5,030.9	785.2	2,440.8	**9,540.7**
12	830.2	3,585.1	611.8	1,916.4	**6,943.5**
13	973.2	4,193.9	680.1	2,248.2	**8,095.4**
14	2,291.5	8,547.8	1,800.8	4,192.6	**16,832.7**
15	1,156.6	5,257.6	38.5	2,479.5	**8,932.2**
16	547.6	2,960.1	19.3	1,453.8	**4,980.7**
17	1,865.9	7,313.9	1,139.9	3,550.2	**13,870.0**
18	1,206.9	5,210.9	888.8	2,787.5	**10,094.1**
19	1,216.7	5,243.8	850.6	2,810.3	**10,121.4**
20	2,864.9	10,686.1	2,251.9	5,240.8	**21,043.8**
21	1,446.3	6,573.4	49.0	3,099.4	**11,168.1**
22	684.7	3,701.5	24.5	1,817.3	**6,228.1**
23	2,332.9	9,143.9	1,425.8	4,437.8	**17,340.4**
24	1,508.9	6,515.1	1,111.5	3,484.4	**12,619.8**

25	1,520.4	6,551.8	1,062.4	3,512.9	**12,647.5**
26	3,580.0	13,354.8	2,813.1	6,551.0	**26,298.9**
27	1,806.7	8,213.9	59.5	3,874.3	**13,954.4**
28	855.4	4,624.0	29.8	2,271.6	**7,780.7**
29	2,915.0	11,426.9	1,780.5	5,547.2	**21,669.7**
30	1,885.5	8,141.0	1,388.4	4,355.5	**15,770.4**
31	1,824.0	7,859.9	1,274.1	4,215.5	**15,173.5**
32	4,295.1	16,023.4	3,374.3	7,861.2	**31,554.1**
33	2,167.1	9,854.4	70.0	4,649.1	**16,740.7**
34	1,026.0	5,546.5	35.0	2,725.9	**9,333.4**
35	3,497.1	13,710.0	2,135.2	6,656.7	**25,999.1**
36	2,262.2	9,766.9	1,665.4	5,226.6	**18,921.1**
37	2,244.3	9,666.7	1,563.3	5,199.1	**18,673.4**
38	5,286.8	19,735.1	4,145.4	9,695.5	**38,862.8**
39	2,662.3	12,126.6	70.0	5,733.9	**20,592.8**
40	1,260.1	6,813.6	35.0	3,362.0	**11,470.7**
41	4,302.6	16,881.9	2,617.1	8,209.9	**32,011.5**
42	2,784.8	12,018.7	2,045.9	6,446.1	**23,295.4**